$25,000 Mystery Sweeps See p. 58

SPECIAL REVIEW ISSUE

AMIGA WORLD

July 1989
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AMIGAWORLD REVIEW, APRIL 1989.

"MovieSetter...the animation program to have... Gold Disk has set a standard for Amiga animation."

MOVIESETTER

A mover and shaker.

By Gary Ludwick

BILLED AS THE first WYSIWYG (what-you-see-is-what-you-get) animation package, MovieSetter combines tradition with innovation. This program integrates classic animation elements into a format that differentiates it from its predecessors.

Your building blocks are faces (commonly called cells), backgrounds, sets, and tracks. A face is a single image of an animated object; a set is a series of faces that portrays animated action by following a logical sequence.

The set editor . . . contains most of the drawing tools found in paint programs, plus some animation specific ones, such as rotation, flipping, and resizing tools.

MovieSetter allows complete flexibility of face placement and order.

Once you have assembled a set, you can define an object's horizontal and lateral movement on the screen with a track. You load your background and set, and the first face appears on the screen attached to the cursor arrow. Simply position the cursor where you want the action to begin. Clicking the left mouse button places the first face, advances one frame and brings up the second face. Repeat this process to lay the entire track.

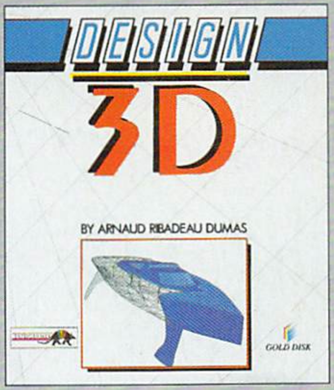
A group of track-editing tools allows you to move tracks after you have laid them down, place them in front or in back of others, insert new elements, and copy, cut, and paste tracks via keyboard or mouse. Best of all, you can see the results of your editing at once.

MovieSetter offers full palette control for up to 32 colors, color cycling, an interlace/full-scan option for video transfer, speeds up to 60 frames per second, plus clipboard and storyboard functions. Syncing digitized stereo sound with the video is again as easy as clicking a mouse button. MovieSetter provides not only stereo output for your soundtrack, but also channel-to-channel panning and the ability to change pitch as well.

This is the animation program to have. Gold Disk has successfully combined important elements - IFF compatible files, real-time previews, stereo sound, and a superb manual - into a powerful, flexible, easy-to-use package.

As they did with desktop publishing, Gold Disk Inc. has set a standard for Amiga animation.

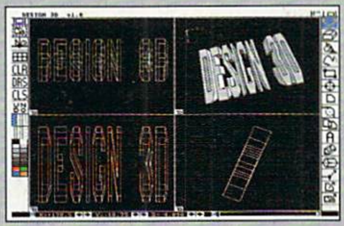
The above article is excerpts from AmigaWorld's April, 1989, MovieSetter review. This ad was created with Professional Page.



AMIGOTIMES 1.4 REVIEW

"Design 3D is a feature-laden program."

"Design 3D is a feature-laden program...The interface is well thought out...You need not ever leave your mouse...Best of all is the inclusion of automatic 3D text generation...a fully featured 3D font editor that allows you to alter the 3D font included or to create your own."



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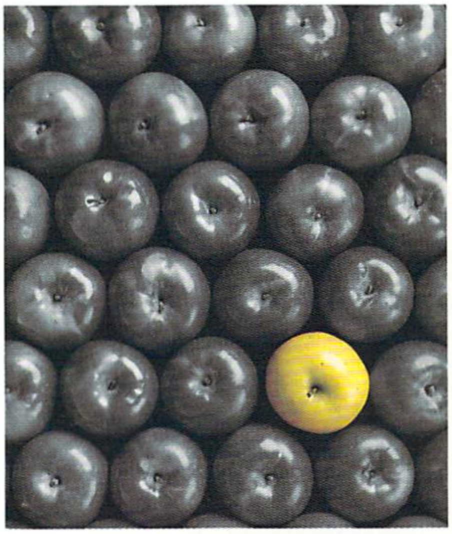
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VOLUME 5, NUMBER 7 JULY 1989

·C·O·N·T·E·N·T·S·



At the fruit stand it's easy to spot "the best of the lot" (cover), but not so on the computer market. That's why our SPECIAL REVIEW ISSUE can help you. We're grading hard-disk systems, performance-testing accelerators, and scrutinizing a major paint program. And our "Reviews" and "Games" sections have been expanded this month to bring you more head-to-head comparisons and single-product evaluations in a wide variety of categories. So dig in. . .and enjoy!

FEATURES

COLUMNS

NOTE: Because of our Special Review Issue coverage, INFO.PHILE and ACCENT ON GRAPHICS will not appear. They will return next month.

DEPARTMENTS

REVIEWS

GAMES

$25,000 MYSTERY SWEEPSTAKES!
Part I of *AmigaWorld*'s 1989 **Mystery Sweepstakes** begins on **page 58**, and you can win from **over $25,000** worth of prizes being offered. We've got a fabulous **Grand Prize** (an Amiga 2000HD and a Getaway Weekend!), two exciting **Runner-Up Prizes**, nine special **Finalist Prizes**, and over 150 valuable **Consolation Prizes**—plus a challenging **murder mystery** to solve. Become a super sleuth right now!

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ZEITGEIST

Another anniversary.

FOUR YEARS AGO the Amiga was launched in New York City and our first issue of *AmigaWorld* was there. Obviously, since the whole Amiga project was so hush-hush, we had a lot of inside help from Commodore. They wanted a slick, professional-quality magazine right from the start to help the Amiga get going, and we said we would love to do it. They let us into the facilities at Los Gatos, gave us facts and stats, let us play with prototypes, and even pre-purchased enough copies of our first issues to get us going. So Commodore helped the Amiga and *AmigaWorld* start.

After things started rolling along, Commodore ran into financial problems, and all the great promotional ideas and marketing plans evaporated. I feel that *AmigaWorld* paid back the debt in that first year. When no one else was talking about the Amiga, except a few people with pioneer spirit, *AmigaWorld* was out there every other month. The Amiga is such a great machine that it practically sold itself, but *AmigaWorld* helped keep people aware.

While the Amiga, Amiga developers, and *AmigaWorld* struggled along in that first year, we published a goodly amount of fluff and talked about a number of products that never saw the light of day. There weren't eleventy-thousand products out there, there weren't millions of machines, and no Super Bowl mega-commercials. But by the end of that first year, thousands, rather than hundreds, of people owned Amigas, the list of public-domain programs was expanding, and *AmigaWorld* could finally start publishing some good material. There were even a few other magazines and user-group newsletters starting up.

By the end of the second year, Commodore was getting back on its feet and things were looking pretty good. The number of companies announcing vaporware had diminished and we started seeing some pretty spectacular products. Products that made the Amiga do things that everyone knew it was capable of doing better than any other computer. Ray-tracing packages that are still far ahead of those designed for any other computer. Paint packages and games that are the standard for great graphics. Accelerator boards, MIDI interfaces, hard-disk drives, color printers, and on and on.

During the third year, Commodore released the A2000 and the A500. Now there were answers to problems. There was hardware and software to fill almost every need. People in other industries started looking at the Amiga as a real alternative to MS-DOS or Macs, particularly in areas like video, graphics, and animation. At the end of 1987, *AmigaWorld* went monthly. There was more material than we could publish, Commodore was beginning to market the machine again, and the Amiga was definitely going strong.

By this time *AmigaWorld* had stopped publishing previews of products, stopped doing interviews, and stopped doing fluff pieces on subjects such as "what is the future of the Amiga?" because you told us you didn't want that. We started covering more products and applications of general interest. We started doing comparative reviews, buyers guides, and product roundups. We didn't do tutorials of obscure languages, publish industry gossip, or do company profiles, because only a few of our readers find those things useful. Instead, we talked about using 1.3, programming in Amiga Basic, and gave you articles about digitizing tips and paint-program techniques.

In this past year, a number of new Amiga magazines have started and some old C64/128 and even Atari magazines have switched over to Amiga coverage. Some of them look pretty good and some of them are user-group newsletters gone berserk. No matter what their level of quality is, this proliferation of magazines gives us all more to choose from. While a few of them take occasional potshots at *AmigaWorld* or even at me personally, I assume that it is in good fun. I read them all, and when they have a valid criticism of us, we try to correct our shortcomings.

Over all, it has been a great four years. Everyone here at *AmigaWorld* has had a lot of fun. Amiga people are a great bunch—a little strange sometimes, but that is what makes you all better than other computer owners. *AmigaWorld* has followed the Amiga since day one, and we have produced some of the best Amiga coverage of the past four years. We will continue to improve, and I bet that the Amiga will too. I don't think we have seen it all yet—probably not even half of what the Amiga is really capable of. I can't wait to see what the next four years will bring, but whatever it is, you will be reading about it here in *AmigaWorld*.

Guy Wright

REPARTEE

Comments, complaints, and concerns

from AmigaWorld *readers.*

Find Another Villain

IN YOUR FEATURE "How to Succeed in Business Presentations" by Bob Eller [April '89], the figure on page 21 is disgusting, to say the least. This is the only sample of desktop publishing reproduced in the article. I wonder if there was no other sample available dealing with business or forms or advertising. Whether we like Mr. Oliver North or not, whether we agree or disagree with what he has done for his country, I do not think we should make use of a very specialized and otherwise great magazine to make fun of him.

It is disheartening to see how most of the press in our country is biased and how every day we are killing a bit more of what should be the roots of American patriotism. I think we Americans can find many other things and individuals who really deserve our prosecution and pitilessness: the czars of drugs, the criminals and the real enemies of the U.S., home and abroad.

Henry D. Miranda
Miami, FL

The Video Race

I'M A COMPUTER consultant who recommends the Amiga as much as possible, especially for clients who work in video. But increasingly of late, it has been harder and harder to advise them to buy the Amiga in view of the Macintosh II. Losing ground to the Macintosh II in desktop video would be a blow to Commodore; it is a niche that needs to be cornered to successfully market the Amiga as a professional machine.

The Amiga is an excellent buy, but many video professionals will spend the extra several thousand dollars for a higher-quality product. While the Amiga has very talented software developers supporting it, they are small in comparison to the battery of large developers behind the Macintosh II. In addition, the Macintosh II developers have worked in tandem to create a cohesive software environment (interface designs are similar), while Amiga developers are more loosely united. In short, the Amiga will lose its lead and fail to hold its spot as *the* desktop-video machine. Consequently, software developers will begin to concentrate on the Macintosh II (which is already happening).

This can be avoided. Commodore must develop more serious hardware to propel the Amiga into the professional video arena. The enhanced chip set (sporting at least two million colors) must be available in the next few months, not a year from now. HAM just doesn't hack it for the video professional. A new fortified commitment by Commodore immediately, coupled with the Amiga's excellent software community input, will keep the Amiga in the spotlight.

James A. Knight
Brooklyn, NY

Firing Back

I AM CONTINUALLY amazed and annoyed that you keep printing letters such as the one by Mr. Geraldo Tarango ["Heavy Competition," Repartee, May '89, p. 8]. I have read enough of them, and I think it's time somebody got up and fired back. I for one am very glad to own an Amiga; it offers more power for the money than any other computer around. I am very encouraged by the flood of new high-quality software and hardware coming out for the Amiga, and I am no longer worried about owning an "orphaned" machine.

In regards to Mr. Tarango's statement that the Amiga is "at least a couple of years behind" IBM, that's not what I hear from the IBM users I meet in computer stores around here. They admit that IBM doesn't make anything remotely comparable to the Amiga in its price range. "One of these days," they say. They hem and haw when I mention that the Amiga had a multitasking, autoconfiguring operating system *two years* before OS/2.

As for the Mac, it is true that we need a fully 32-bit Amiga with some improvements. We all want to see an A3000. However, I am pleased by all the progress I see coming out of CBM. They are rapidly closing the gaps, and already surpass the Mac in many areas, such as desktop video.

It's also pretty funny to hear Mr. Tarango say that the combination of a Mac II an a Laserwriter is "unbeatable." Professional Page or Pagestream with a suitably enhanced Amiga and, say, an NEC LC890 can compete quite well, especially if you look at the price tag.

I won't gloss over all the fury Commodore has aroused in Amiga users over the years. They deserve every bad word we've said about them, and we should still maintain some skepticism about them. But I see a strong desire to at last "get with it" coming out of the folks at CBM. I for one plan to stick with the Amiga.

So there, Mr. Tarango.

Bonnie R. Prinne
San Jose, CA

Send your letters to: Repartee, *AmigaWorld* Editorial, 80 Elm St., Peterborough, NH 03458. Letters may be edited for space and clarity. ■

NOTEPAD

Compiled by Linda Barrett

East Meets South



TAKE A GROUP of Japanese engineers, two Amiga 2000s, and a good teacher and put them on the banks of the Mississippi. The result: a joint effort to tear down the language barrier, and a boon for an Arkansas community as well.

A little over two years ago, Yamato Kgyo Steel of Himeji, Japan, and an American company, Nucor Steel, joined together as Yamato-Nucor to build a mill in Blytheville, Arkansas for reprocessing scrap metals into new steel. The venture created 800 new jobs for the town of 25,000. Yamato Kgyo immediately asked the community for its cooperation in teaching their temporary crew of Japanese engineers to speak English.

The Mississippi County Community College in Blytheville provided a speech-communications teacher, Michael Wilson, with special training in English as a Second Language (ESL), and he began instructing the first team of engineers with conventional classroom procedures. After six months, the success of the students so impressed the management at Yamato Kgyo that they gave the Community College $10,000 to establish a language lab.

As a cartoon animator who has put his own Amiga to tough use for several years, Wilson naturally chose two Amiga 2000s for the lab. He found the consummate software in MicroEd's "Learning English as a Second Language." All 11 disks in the set are self loading, completely mouse driven, and need minimal instruction to use. A basic vocabulary is introduced using mastery-learning techniques, the Amiga voice, and aesthetic graphics.

Students typically spend two to four weeks on the Amiga, then advance to human interaction. Wilson gets a good indication of their progress when they begin to jokingly imitate the "robotic" computer voice. "This tells me they have a handle on what the real English inflection should be." Several of the students have since become fluent in English, and Yamato Kgyo is considering installing an Amiga language lab at their facility in Japan.

In two years, the Japanese will return home, and the plant will be completely manned by Americans. Wilson hopes he can then help others in the community. His vision is a language lab with additional Amigas and full-time instruction that will offer English as a second language to the many new Asian immigrants in the area, and to foreign-born families of personnel at nearby Eaker Air Force Base.

—Sue Albert

Quiet but Promising

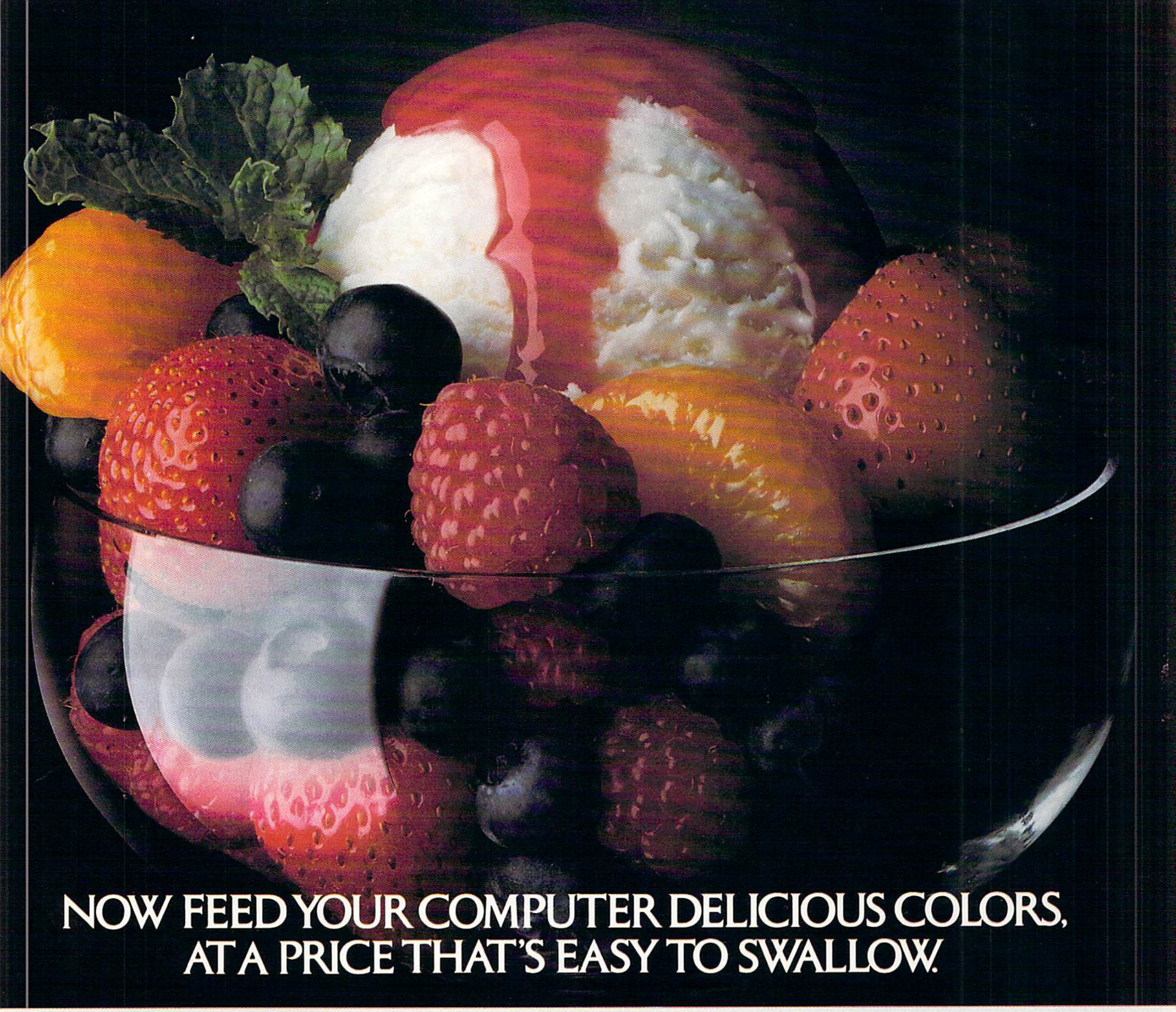
CHICAGO PLAYED HOST to this spring's COMDEX exhibition, but even the city's many evening attractions could not compensate for a fairly boring show.

Even Commodore's large booth didn't hold many new products. The booth was divided into little rooms by applications—desktop publishing, graphic design, desktop video, music, and home office. The desktop-publishing room had a system that made me drool: Professional Page (Gold Disk) was running on an Amiga 2500 with a Sharp 300-dot-per-inch color scanner and a QMS ColorScript 100 color, thermal-transfer, PostScript laser printer. Commodore's more affordable desktop-publishing "solution" included an Amiga 2500, Professional Page and Professional Draw (Gold Disk), a multisync monitor, MicroWay's flickerFixer, and an NEC LC890 SilentWriter (a PostScript laser printer). Commodore representatives were careful to call the combination a solution rather than a package, because you have to buy and link the components yourself. No matter what the semantics, I was glad to see that Commodore included flickerFixer in its suggested configurations.

The most interesting display in the booth was an ArcNet board running in a native Amiga expansion slot in an Amiga 2000. With the board the A2000 was acting as a client in a Novell NetWare local area network (LAN). If Commodore really delivers this technology, it could finally give the Amiga a way to hook into the thousands of PC LANs in the world. Don't hold your breath; Commodore neither promises when it will deliver a product using this technology, nor even if it will ever produce such a product. Company representatives could not even get the demonstration completely working on any of the three days I visited the booth.

I hope the demonstration signals Commodore's intent not only to improve the Amiga in its own right, but also to tie the Amiga into the millions of other microcomputers in the world. Such connections, along with a 68030-based Amiga to combat the increasing number of 25MHz and 33MHz PCs, and the 68030 Macs, could help keep the Amiga market growing. *—Mark L. Van Name*

ILLUSTRATED BY KIM WILSON EVERSZ



Introducing the Sharp JX-300 letter size color scanner.

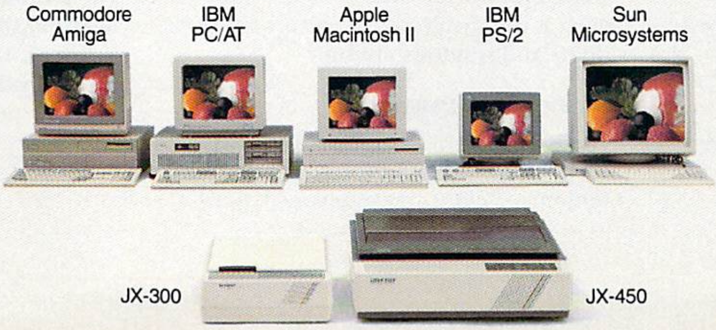
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Sharp also offers the JX-730 color inkjet printer to give you plain paper color printouts that are faithful to your originals.

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It is not true CAD.

But every builder should have it.

By Stephen Ellerin

THE DRAFTING, OR CAD (Computer-Aided Design), function of HomeBuilders_CAD is incidental. This program was designed primarily to calculate the cost of new wood-frame construction.

HomeBuilders_CAD offers a welcome alternative to the traditional procedure of measuring plans, calculating the hours and supplies required, extending the costs, and tallying the sums by hand. One program module helps you sketch out a plan, while a second prices it. HomeBuilders_Choice, a companion package sold separately, lets you edit the original database.

The HomeBuilders_CAD package includes two program disks plus duplicates of each, and superb documentation. The manual assumes nothing; its logical organization and clear, simple language help you understand each point on the first reading. The unique tutorial spells out the steps you need to take, and exactly how your Amiga responds to your input. Hard-disk installation instructions are included, as are guidelines for loading HomeBuilders_CAD data into word-processing, spreadsheet, and database programs.

MODEL BUILDING

Drafting with HomeBuilders_CAD is easy and requires no special skills: Just draw a box and you have four walls. To add a window, select the menu option and click. The design module is not a true CAD system, however; its graphics are not precise, it supports only dot-matrix output, and it lacks an Undo command.

As with true architectural design, you start by constucting the plan (aerial) view. Selecting any menu option allows you to click and draw. The pull-down menus are organized in logical order from site preparation to foundation, walls, roof, interior finishing, and fixtures. HomeBuilders_CAD provides proper architectural symbols, and as each command executes, the program suggests your next action. To lay out the different stories of your building, simply adjust the level gadget. Home Builders_CAD offers no editor to change the level of objects already drawn. Should you adjust the level gadget 22 inches above the floor to add a stair landing, you must remember to reset it before adding more objects. If you forget, and later try to access those objects from floor level, they will not respond. While you can jump through stories, the Change Levels gadget otherwise moves only one inch at a time; a provision for entering values from the keyboard would be a welcome addition.

HomeBuilders_CAD is the only Amiga design program I know of that can create elevations—exterior views from back, front, and side. Because walls are transparent in Elevations mode, however, it is difficult to tell which walls the doors and windows are on.

SUM OF THE PARTS

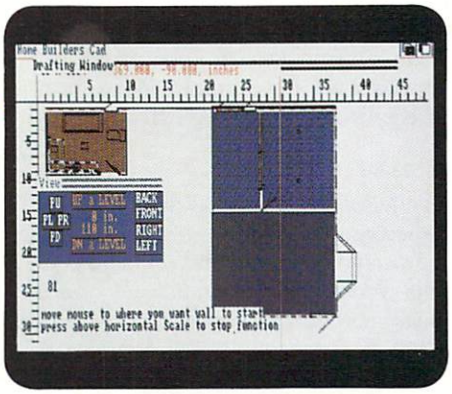
HomeBuliders_CAD introduces pricing early in the design process so you can find out—before you've planned your dream house and are forced to cut back—whether a proposed item falls within your budget. Although the program tries to account for all building necessities (down to the number of nails and the cost of hammering them in), it does not have provisions for calculating moldings and ceilings, so you must remember to allow for these when figuring door, window, and flooring costs.

You can reach for the Estimate menu to get cost figures based on the HomeBuilders_CAD default values. Select either Cost Total or Itemized Breakdown, and then enter the total number of each item in your building—or in just one area, such as the kitchen. Audit Trail gives you an on-screen list of all items in every section, which you can output to a printer.

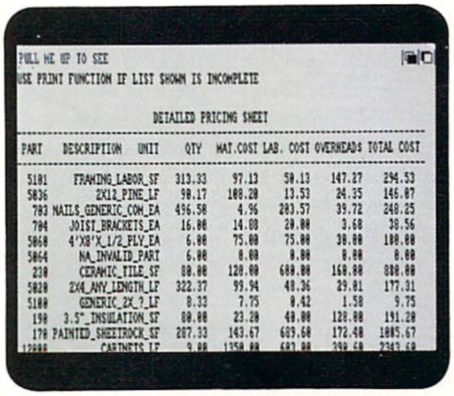
Edit Parts, the second program module, lets you alter the information HomeBuilders_CAD uses to calculate prices. You can change the price of any item, the labor required to install it, or the contractor's mark-up or overhead. As you adjust each figure, the Total Cost column recalculates. While you can move freely around the spreadsheet using cursor keys or the mouse, the program blocks your access to cells containing formulae so you cannot cause injury. The Edit Parts program's Save command discourages frequent saving of data, however, as the option also serves to exit the module.

UP IN THE AIR

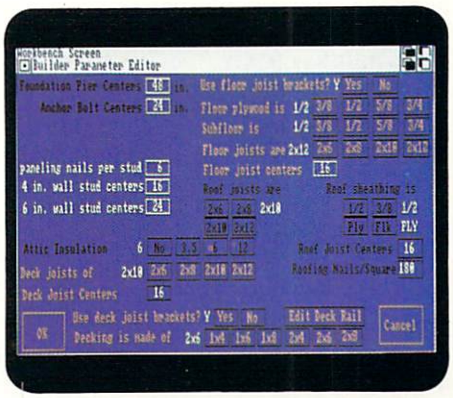
HomeBuilders_CAD can save you hours worth of work, but there are quirks to be aware of. In my tests, the drafting module crashed occasionally in various situations for no apparent reason.



You start the design process with a "birds-eye" perspective.



The program generates cost figures through its editable database.



Using HomeBuilders_Choice, you can alter building parameters.

Drawing tools are implemented inconsistently. For instance, the Draw Walls option remains in effect until you deactivate it, yet you must select the Make Electrical Outlet option each time you need it. Moving individual objects is awkward because it is often difficult to zero in on items—especially adjacent pieces.

To create a cabinet, you draw a rectangle, then click on the starting and ending points to place it. When the cabinet materializes on screen, though, it is centered over the spot you selected as an end point. Because the program's main function is pricing, this is merely annoying, not critical.

X and Y coordinates at the top of the screen indicate your mouse's position (in either absolute terms or in relation to another point), but the display lags behind mouse action. The display registers only in inches, which makes dealing with large measurements awkward. The readout sometimes does not recognize points (once my display would not register 48, but showed only 47 or 49), and there is a discrepancy of approximately one foot between the coordinates' display and the on-screen ruler.

Reading the screen is sometimes difficult. The command screen sits so high on the display that it blocks the main-menu headings, but if you move it down it obscures some menu items. Dimension lines are displayed so that the specifications text obscures the end point.

The HomeBuilders_CAD file system offers no icons to help you change drives, and no prompts in the requesters. The only way to find the contents of a disk is to access the ever-active CLI window on the Workbench screen. The Save command overwrites any existing file of the same name without warning, and the New and Quit commands give you no reminder to save your work. Unlike most programs that run under Workbench 1.2 or higher, requesters do not respond to keyboard entry of an option's first letter (such as C for Cancel).

The program's only Print option uses Commodore's Graphicdump program, which delivers lackluster output. HomeBuilders_CAD would be more useful if it allowed you to save in popular CAD formats such as Aegis' Draw 2000. I would also like to see an ability to accept drawings from other programs, and a facility to let you trace blueprints via mouse for instant pricing of pre-drawn plans.

TAKE YOUR CHOICE

For the most part HomeBuilders_CAD defaults to common building preferences, but some of the assumptions seem flawed. A foundation should, as a rule of thumb, be half as thick as the footing under it. HomeBuilders_CAD, however, gives its eight-inch wall a 12-inch wide footing. Fortunately, HomeBuilders_Choice, a companion program sold separately, allows you to make your HomeBuilders_CAD estimates more precise by changing construction parameters and adding custom parts to your design.

Changing parameters is simple: You click in the labelled boxes to alter the default sizes and positions of parts. (You can thus switch from 2×4 studs spaced 16 inches apart to 2×6 framing spaced 24 inches.) While pricing custom pieces is also easy (just enter cost and labor data into the built-in spreadsheet), placing those custom parts in your drawing is not. Most Amiga programs, including HomeBuilders_CAD, allow you to create a window, for example, simply by clicking to define the upper right and lower left corners. HomeBuilders_Choice, however, requires you to enter the start and end coordinates for every line of your new object from the keyboard.

BEST GUESS

Costing is by nature inexact, but it is also necessary. HomeBuilders_CAD standardizes and hastens the process, and even the program's default prices will give you a good ballpark figure. As you refine HomeBuilders_CAD's database, you will develop a very fine system capable of yielding accurate estimates. If you are willing to put up with HomeBuilders_Choice's awkward design phase, this module's ability to price whatever you can dream up will reward you with even more finely tuned estimates.

HomeBuilders_CAD is designed specifically for new construction. Remodeling work involves many more variables, some unknown until you open up the walls of the existing structure. Still, ►

the program can help with remodeling estimates, too, as long as you keep in mind the inherent limitations.

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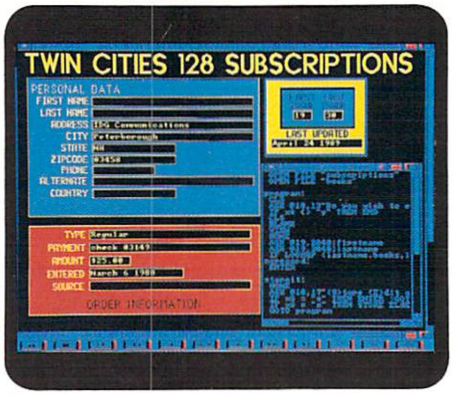
By Loren Lovhaug

IT IS NO surprise that the Amiga's reputation as a graphics and sound wonderbox has overshadowed its image as a productivity tool. Some of the most impressive packages to appear for the Amiga in recent months, however, are upgrades to database software that rival, and in many instances surpass, the capabilities of such MS-DOS powerhouses such as dBase IV, FoxBASE, and Paradox.

SUPERBASE PERSONAL 2

Precision Inc. introduced Superbase Personal 2 to serve customers who have no need for the extensive capabilities of the firm's flagship product, Superbase Professional, and yet desire a more ambitious database manager than the original Superbase Personal. The highlights of this beefier package include relational support, a built-in text editor, and telecommunications abilities. Even with these robust feaures, however, Superbase Personal 2 is very easy to learn and use. The documentation is complete and logically organized, and includes a contents listing, an index, and an extensive tutorial. Database creation, record manipulation, and command selection can be handled via VCR-style gadgets, pull-down menus, or the keyboard equivalents provided for both methods.

The real genius behind Superbase Personal 2 is its sophisticated and elegant query dialogue. More versatile than the simple template most database managers provide for record queries, the Superbase query dialogue can trigger a number of activities, such as selecting (filtering) records based upon any of a number of criteria, sorting records, batch updating of specific records, and creating global reports. Thanks to the query dialogue's simple and intuitive nature, accomplishing these feats is as simple as filling in blanks on a pop-up requester.



Pro 3.01 incorporates all the new Superbase Personal 2 features—and more.

Personal 2's LOOKUP command, which lets even novices benefit from the power and convenience of related files, gives the program a decided advantage over most of its competitors. By simply placing the command in calculation or validation fields or in query dialogues, you can achieve multi-file cross validation on data entry, and create reports that consolidate data from various related files.

Superbase Personal 2's integrated text editor is provided to allow you to create, display, and edit text for mail-merge applications and for free-form text linkage to individual records. The Amiga's multitasking nature renders this a null advantage for those who have enough memory to simultaneously run a full-featured word processor. Still, the editor allows those without such luxuries to customize documents (by inserting the names from a mailing list, for example, into a form letter) without incurring extra expense.

HELLO?

The telecommunications abilities of Superbase Personal 2 are intriguing; they make it possible for you to access data from remote locations and coordinate data entry from multiple sites. While the telecommunications support itself is complete (including provisions for Xmodem and WXmodem file transfers, auto-dialing, and appropriate modem configuration abilities), it is not documented in the manual whatsoever. Instead it is tersely discussed in the Read_Me file on disk. Without benefit of a comprehensive tutorial, it will be difficult to get the most out of this facility.

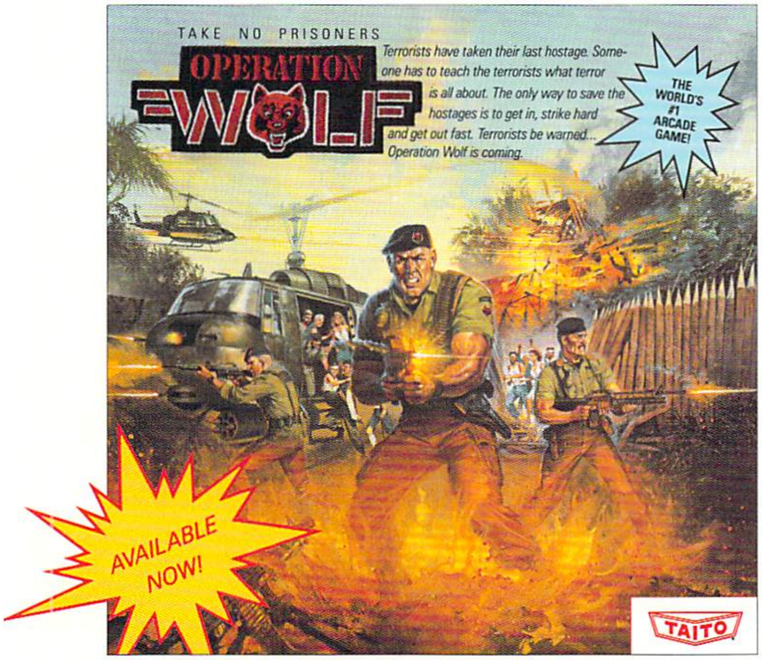
Of particular interest to owners of earlier Superbase Personal versions: a global-search facility within external text files, time field types, multiple-response text fields, constant and read-only field types, batch modes for data entry and record removal, Ternary operators, multiple import and export options (including redefinition of field and record separators), and direct import to foreign file formats such as dBase and Lotus 1-2-3.

Superbase Personal 2 is a logical upgrade to Superbase Personal. It offers more power and sophistication than do most non-programmable databases—especially through its excellent query dialogue and relational abilities—at a comparable price.

SUPERBASE PROFESSIONAL 3.01

Since its introduction, Superbase Professional has been widely regarded as the Amiga's finest database-management system. Pro incorporates the same convenient user interface as Superbase Personal 2 and all of its capabilities, plus a myriad of other features and functions. ►

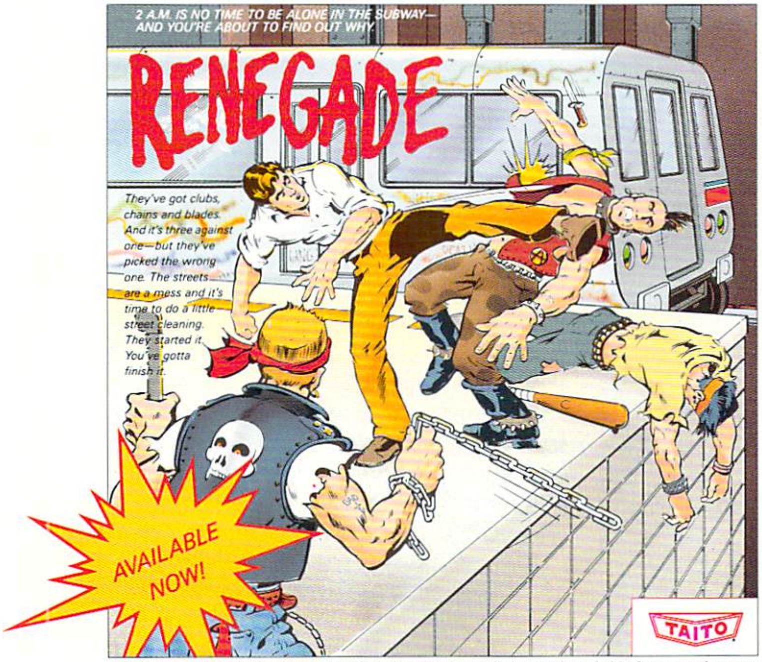
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The most important of these are its extensive programming language (called DML—Database Manipulation Language), its object-oriented forms editor, and its telecommunications abilities.

Superbase Professional is a vast, complex application, with an amazing degree of flexibility. I will limit my comments to only the most important aspects of the 3.01 upgrade; for a detailed discussion of the original Superbase Professional, I refer you to the article entitled "Big League Pro" on p. 56 in the June '88 issue of *AmigaWorld*.

The Superbase Professional documentation now comes spread over three volumes. Volumes 1 (which fully explains how to create and use the database and integrated text editor on a non-programming level) and 2 (an extensive command-by-command summary of DML) are reprints of the original Superbase Professional manuals. The 58-page Volume 3 corrects errors in the first two books, and goes on to explain added features and new DML commands and syntax. This arrangement is cumbersome because the tutorials and explanations in the original documentation are crucial to understanding the program, and to get all the information on a topic, you must flip between manuals. Additionally, many 3.01 enhancements are not covered on paper at all, but are documented only on disk. I recommend that Precision assemble a "unified" manual (with new information highlighted) that logically integrates the first three volumes and the massive 27K Read_Me file.

Documentation quirks aside, Superbase Professional's enhancements are astounding. They can be divided into three categories: new communications capabilities, new or improved DML commands, and form-editor enhancements.

LET'S TALK

Under the communications area, Superbase Professional 3.01 incorporates telecommunications support and keyboard equivalents for control functions as does Superbase Personal 2. The telecommunications capability (which is this time fully documented in the supplementary manual) has even more potential within Superbase Pro because you can automate it through DML. This gives the Amiga an edge, as automated database telecommunications have traditionally been the exclusive domain of mainframe and network environments. Now, you can create programs to automatically disseminate memos, prices lists, inventory lists, and product orders to remote locations via modem. Also under program control, Pro 3.01 can serve as a smart host for other systems calling to retrieve data, and can call other systems to retrieve or exchange data automatically.

Extending Superbase Professional's communication abilities even further, in an interior, rather than exterior, fashion is the addition of an ARexx port, which allows other applications to tap Superbase's capabilities in a modular environment. One application might be to use Superbase Professional as an application controller and data-gathering mechanism under ARexx.

Last on the communications list are extensive enhancements to the data-import and -export facilities. These additions allow you to write to and read from virtually all of the popular industry stan- ►



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dard file formats (such as the .DIF, .WKS, used by MS-DOS applications) plus Superbase's own format and delimited and non-delimited ASCII text.

More Command of the Language

Superbase Professional 3.01 lets you load and save different configurations (.par files) from within DML, and a number of new commands allow you to set various system parameters—such as window titles and invocation of the editor when program errors occur. Also enhanced are the Blank and Enter facilities, giving DML greater control over how data is entered into forms, fields, and variables.

A new validation requester enables you to create "smart" record-search prompts that suggest alternatives when no records containing specific field data are found. DML's report facilities now include statistical functions (such as MEAN, MAX, MIN, standard deviation, variance, and summation) that work on both field and DML-array data. Facilities for detecting and processing mouse and gadget events include an ability to calculate and chain programs.

Finally, a number of formerly tedious forms-creation aspects are much less troublesome. The tear-away attribute menu has been simplified to reduce confusion, and there is now menu support for each gadget. You can now make global attribute changes (such as text color) on numerous objects all at once. The new transactional forms facility mates Superbase's extensive relational abilities with its superior query-language facilities. This allows you to create input and calculation forms that are defined by the results of specific queries between related files. Under such a scenario the actual layout of the form is itself dynamic, and the number of fields or calculations displayed—as well as the data within the fields—depends on the result of a relational query.

If all of this seems overwhelming, rest assured, it can be. It is, however, all part of what makes Superbase Professional the most flexible and sophisticated productivity application I have seen on any microcomputer. Fortunately, you can get abundant value out of Superbase Professional even if you master no more than a few of its enormous capabilities.

Professional DataRetrieve

Because Superbase Professional has been the standard by which all other Amiga databases are measured, I couldn't help but compare Professional DataRetrieve to it. I was pleased to learn that the two packages are quite similar.

Like Superbase Pro, Professional DataRetrieve is a programmable system complete with relational file capabilities and an object-oriented forms-editing (Abacus uses the term "mask") facility. Both programs require at least one megabyte of RAM and are limited in capacity only by your storage system (floppy, RAM, or hard disk).



Pro DataRetrieve lets you use non-system fonts in field data as well as headings.

Again as with Superbase, you can select and search for records with equal ease via keyboard, screen gadgets, or pull-down menus, and although Professional DataRetrieve's search and selection facilities are not as elegant as Superbase's query dialogue, they are adequate. Both allow you to save selection criteria, use multiple indexes, and organize records at will.

Professional DataRetrieve's forms (mask) editor is superior in many ways to Superbase's, and is better integrated into the program framework. It is easy to establish relational links between files and you can display multiple masks at the same time. Professional DataRetrieve uses three kinds of masks: screen (primarily for data entry and display), printer (for controlling printing of reports, mail merges, and so on), and list masks (which are helpful for quick exam-

Continued on p. 78


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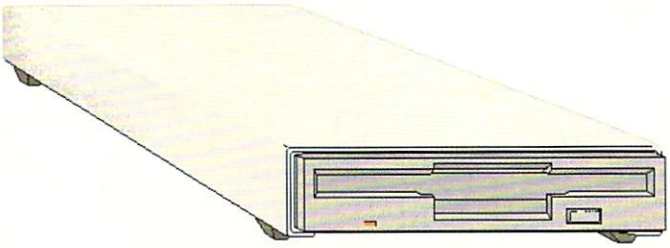
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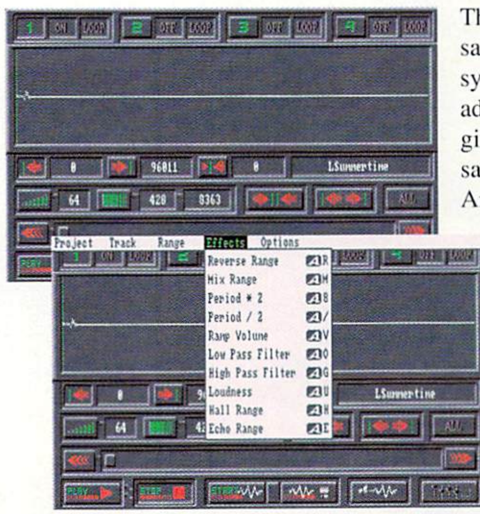
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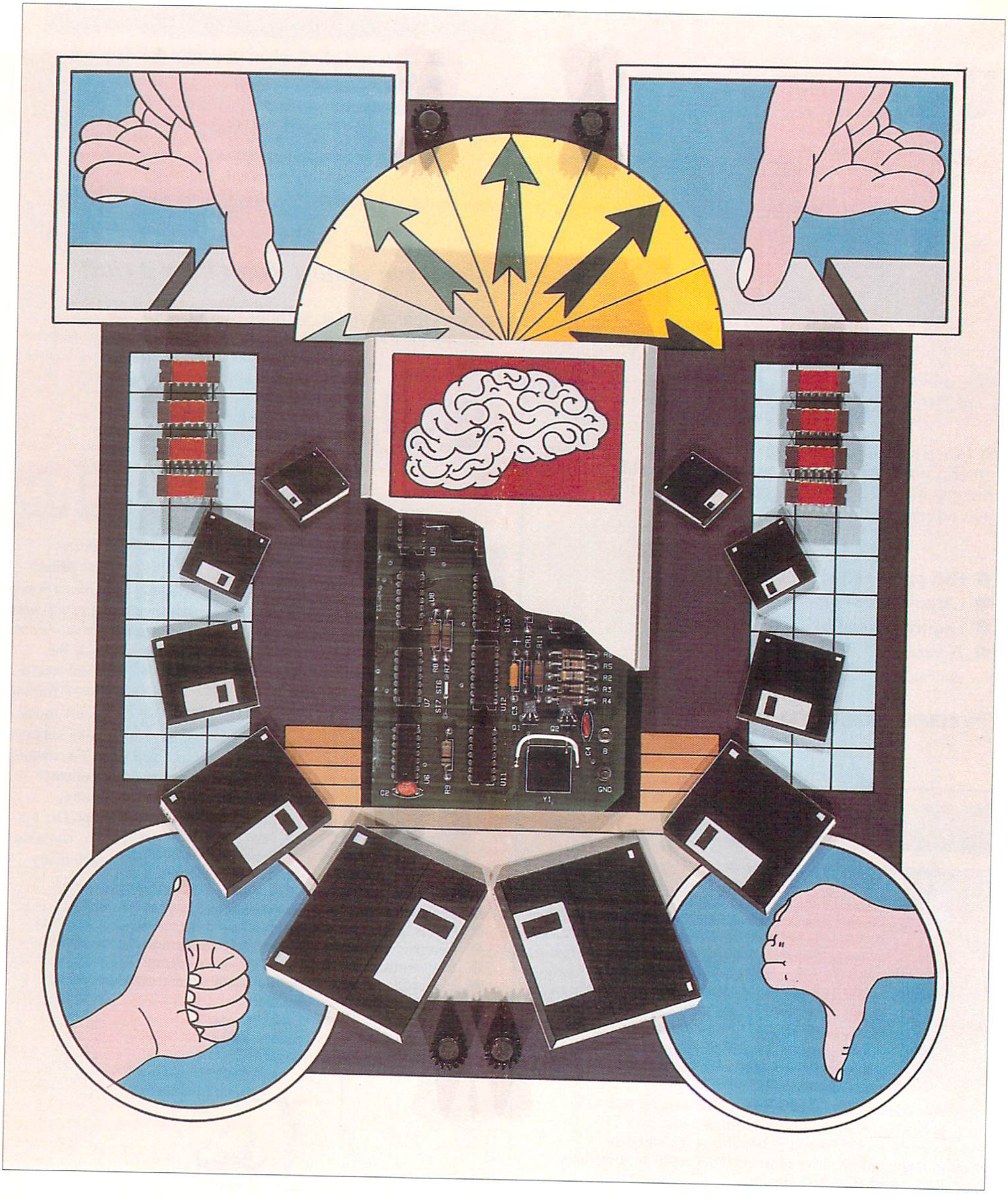
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ILLUSTRATED BY PHILIP BROOKER

Hard and Fast

Test Results on 14 Amiga Hard-Disk Systems

AFTER DECIDING YOU need the convenience, speed, and storage capacity a hard drive will add to your Amiga, you have an even harder decision ahead of you—which one do you buy? To make things easier, we've compared seven SCSI (Small Computer Systems Interface) hard-disk controllers for the A2000 and seven complete SCSI hard-disk systems (controller, drive, and cables) for the A500. All were evaluated and graded (A through F) on performance, ease of installation, features, and price. Each product's overall grade reflects the sum of the individual grades, with greater weight given to performance and ease of installation.

One of the most important performance factors is speed, which is largely influenced by the method (Direct Memory Access or Processor I/O) used to transfer data between the hard disk's controller and the Amiga's memory. The Direct Memory Access (DMA) technique lets the controller move data with minimal supervision from the Amiga's 68000 processor. In Processor I/O, the 68000 moves every byte of data between the interface and your machine's memory. Because DMA is regarded as the generally faster data-transfer method, some companies describe their controllers as DMA when in fact they are not. The companies make the claim based on the fact that their interfaces provide DMA transfer from the SCSI disk to an on-board memory cache. Do not buy a hard-disk system based upon the absence or presence of the letters "DMA"; examine each system's performance. Interestingly, one of the Processor I/O controllers scored the highest on our benchmark tests.

For the ease-of-installation category, we tried to put ourselves in the shoes of an intermediate user who may be unfamiliar with mountlists, cylinders, and file systems. Systems that hide these concepts received high marks. The best grades went to systems using the hardblocks technique, which stores drive-configuration and partition information directly on the hard disk in reserved areas (hardblocks). Hardblocks minimize the amount of technical knowledge required to add a new hard drive to your system.

Grading the features and price categories was more subjective. Products that let you automaticaly boot from your hard drive under Kickstart 1.3 had a bit of an edge. For price, we contrasted features and performance with suggested retail prices. A hefty price tag, therefore, did not necessarily mean a low grade. ►

By Robert Ryan and Louis R. Wallace

Amiga 2000 Hard-Disk Controllers

It's time to give the third degree to seven SCSI boards for the A2000.

WITH ITS INTERNAL slots and drive bays, the Amiga 2000 gives you plenty of flexibility in adding a hard drive. The best way to buy a system is to purchase the controller and disk separately. By shopping around for individual components instead of an all-in-one solution, you can combine the fastest, or cheapest, into your ultimate system. Because most stores do not allow you to test drive controller boards before you buy, I put seven SCSI boards through their paces.

Because a drive's type, partitioning, contents, and file system affect data-transfer speed, I decided to test each controller with the same Amiga 2000 and Quantum 40S drive, keeping the file system, partitions, and files constant. Peculiarities of the SupraDrive and Flash!Card controllers forced me to twice abandon my strict controls and use a different drive—weigh the benchmark results for these controllers accordingly. See the descriptions of the individual controllers for details.

With each controller, I first went through the hardware and software installation procedures outlined by the manufacturer. After creating a large FastFileSystem partition, I copied the contents of a standard Workbench 1.3 disk into it and ran two tests, Dperf2 and PerfTest. The results are in the accompanying charts.

The standard Amiga hard-disk benchmark program, Dperf2 (an update to Rick Spanbauer's Dperf written by Khalid Aldoseri) measures a number of aspects of hard-drive performance. It determines the number of files per second that can be created, deleted, or scanned in a directory. It also measures the speed of drive-head movement with its Seek/Read test. To measure the speed at which data is read from or written to the drive, it performs a series of read/write cycles, starting with 512 bytes and increasing by stages to a full 256K (256 × 1024 bytes). By measuring the time required for each action, it can calculate the actual data transfer rates.

PerfTest (written by Louis Wallace) tests the performance of hard-drive systems under normal conditions and in a situation where a hi-res, 16-color, overscanned screen creates contention for DMA bandwidth. The advantage of using PerfTest rather than simply running Dperf2 in the background while a graphics program displays an overscanned image is that PerfTest tests the effects of overscan only. Other methods mix the effects of overscan with the effects of running another process, thus blurring the true effects of overscan on hard-disk performance.

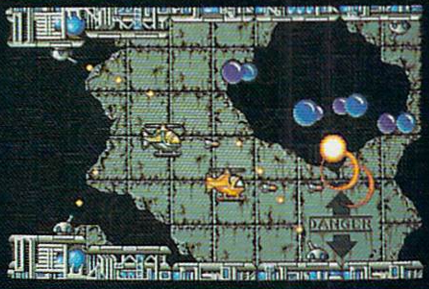
Why bother with testing the effects of overscan on controllers? Quite simply, problems with the Commodore A2090, the predecessor to the autobooting A2090A, led many people to assume that DMA controllers would not work or were horribly crippled in situations such as overscan where there was contention for DMA bandwidth. As you will see below, all DMA controllers should not be judged by the performance of one DMA system.

As a cross reference to Dpref2, PerfTest checks the actual time required to read or write to the drive, measuring only the actual data-transfer rates and not the time required to open, close, or delete the files. By using two programs for speed testing, I was able to verify the validity of one with the other.

After performing the standard tests, I exercised each controller for days—running various software, reconfiguring the disk partitions, and generally trying to determine if any of the controllers exhibited unstable tendencies over time. To my surprise, all seemed impressively solid. Once I had a system configured, I could not pinpoint a situation where I could trace a system crash to the hard-drive system or where any hard drive developed a read/write error. Compared to the results three years ago when I reviewed the first Amiga hard-drive systems, this is remarkable and a tribute to how far the Amiga has come. ►

By Robert Ryan


Blood Money


DANGER






MONSTER BASHING
EQUIPMENT

Results

A2090A

A2090A
Commodore Business Machines
$399
Performance: C
Ease of Installation: B–
Features: B
Price: D
Overall: C+

Although the A2090A performed excellently under standard conditions, its performance when used with overscan is shocking and incomprehensible. Although it does not corrupt the disk in overscan situations as the A2090 did, the A2090A suffers from severe timing problems. As a result, the A2090A is unacceptable for most video and advanced graphics applications.

While installing and partitioning drives using the A2090A still involves editing mountlists, the very helpful manual eases the process. Special features of the A2090A include its ability to control SCSI or ST-506 standard drives, which are less expensive but slower. The A2090A is the most expensive controller tested and is not a good value.

HardFrame

HardFrame
MicroBotics
$329
Performance: A
Ease of Installation: C
Features: A
Price: C
Overall B+

The HardFrame is the best featured and best performing interface I tested. Although it did not reach the transfer rate achieved by the Xetec controller when used with the largest files, its overall performance is unmatched. It shows what a properly designed DMA interface can do.

The features of the HardFrame are also unmatched. In addition to letting you autoboot directly into a FastFileSystem partition, the HardFrame uses hardblocks. Finally, the HardFrame lets you mount a 3½-inch drive directly onto the card, keeping your Amiga's internal drive bays free.

Installing and partitioning drives with the HardFrame is a study in contrasts. Unlike most of the other controllers examined, the HardFrame installation software extracts information about the SCSI drive from the hard-drive controller. You do not even have to indicate the name of the SCSI drive. Unfortunately, the installation software then leads you through a series of questions about transfer rates, file systems, bytes per cylinder, and other esoteric subjects. This is not as bad as it sounds, because the software tells you the defaults it extracted from the drive. I do not understand why it bothers to ask a lot of questions to which it already knows the answers. The only things you need to enter are the number and sizes of the partitions you want on the disk.

The HardFrame is pricier than most of the SCSI interfaces, but well worth the money.

FastCard

FastCard
Xetec
$199
Performance: B+
Ease of Installation: C
Features: B
Price: A
Overall: B

The FastCard has the distinction of achieving the fastest transfer rate of any controller tested. In reading 256K chunks in the Dperf2 test, it averaged over three-quarters of a million bytes per second! The amazing thing is that the FastCard is not a DMA interface. Although some other controllers outperformed it on average, the FastCard is my controller of choice for applications that need to move large blocks of data quickly.

Although it comes with an Intuition-based installation program, the process was not particularly easy. The software does extract information from the drive, but I still found myself dealing with cylinder numbers and the like. I also discovered I could not change partitions once I had established them. Like the HardFrame, the FastCard uses hardblocks. Unlike the HardFrame, however, the FastCard does not provide a way to erase previously established hardblocks. So, although the installation software looks better than most, it did not prove any easier to use.

To save space, the FastCard also lets you use it as a hardcard. At $199, it is an excellent value.

SupraDrive

SupraDrive
Supra Corporation
$799*
Performance: C
Ease of Installation: A*
Features: B
Price: B*
Overall: C+*
* assumes use as an all-in-one system

I was not able to test the Supra SCSI interface with the standard Quantum 40S drive. The reason for this is simple; with the autobooting Supra SCSI controller installed in an expansion slot, I was unable to boot from df0:. I was thus unable to boot the machine in order to install the drive.

This is not as bad as it sounds because Supra is in the business of providing all-in-one solutions. The SupraDrive I tested came with a 30MB Seagate ST-138N drive. Installation consisted of putting the card in my machine and turning on the power. The drive ►

autobooted, and I was in business. All-in-one systems are notoriously easy to set up.

The Supra utilities make it simple to alter both the number and the size of your partitions. Although I cannot recommend the Supra interface as a stand-alone product until it also lets you boot from a floppy, the SupraDrive system is a good solution if you want very good performance but do not want to struggle with hard-drive installation. My only complaint is the severe performance degradation the system exhibited under overscan.

Impact A2000

Impact A2000
Great Valley Products
$360
Performance: C
Ease of Installation: A
Features: A
Price: C
Overall: B

All hard-disk controllers should be as simple to set up as the Impact A2000. After installing the hardware, you simply boot with the included software. The program first extracts the information about your drive from the controller, and then asks you a few simple questions. After you answer, the software installs your drive automatically. To partition your drive, you enter the sizes (in megabytes) of the partitions you want: No more worrying about low and high cylinders!

Although the Impact is not a screamer in the performance department, it is more than adequate for most applications. What makes the Impact A2000 hardware special is that, in addition to the SCSI interface, it contains sockets for two megabytes of RAM. So, although the $360 price tag seems high, you actually get two expansion boards for the price of one. An excellent value, this board is ideal if you want to expand both memory and disk capacity but do not have a lot of money.

Flash!Card

Flash!Card
Expansion Technologies
$299.95
Performance: D
Ease of Installation: D
Features: D
Price: C
Overall: D

All the controllers I tested had something to recommend them, except this one. It claims to be a DMA controller, but I saw no evidence of DMA speed. It claims to autoboot, but the autoboot ROM sockets were empty. The Flash!Card's performance was by far the worst of any interface tested.

The installation software consists of a formatting program that I remember using with C Ltd drives three years ago—I did not like it much then, either. You had better have a wonderful understanding of mountlists.

Finally, I was unable to get the Flash!Card to work with the Quantum 40S. Consequently, I tested it with the ST-138N. I do not think it made any difference.

TrumpCard

TrumpCard
Interactive Video Systems
$189.95
Performance: C
Ease of Installation: C
Features: C
Price: B
Overall: C

The TrumpCard is not a bad product, but has little of interest. All the standard features you expect from a SCSI interface are present, but the TrumpCard offers nothing beyond that. It is reasonably priced, but you have to pay extra for the mounting brackets if you want to use it as a hardcard. It performs well under standard conditions, but degrades quickly in an overscan environment. In all, it does not have an outstanding feature.

The controller tries to be outstanding in its installation software. Featuring a full Intuition interface on a custom screen, the program looks good initially. It even provides a checklist for you to follow as you configure your system. The problem is that it still expects you to be able to deal with cylinder numbers and the like. The provided checklist is fine, but why not simply automate the installation process completely?

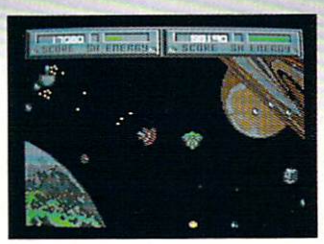
Recommendations

If money is no object, get the MicroBotics HardFrame; it is the best SCSI interface overall. If money is an object, and you still want excellent performance, albeit without some special features, go with the Xetec FastCard; it is the best buy in the group. If memory expansion is in your future, you should spend a little more now and get the Impact A2000. If ease of use is your big concern, go with the Impact board or with an all-in-one solution from Supra.

Perhaps my strongest recommendation is that you do not blindly buy the A2090A simply because it is ►

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from Commodore. It has a lot of trouble with overscan, and because it controls ST-506 drives as well, it costs too much. The corollary to this is that you should avoid buying Commodore's Amiga 2000HD and 2500 systems. These incorporate the A2090A and slower ST-506 drives. Instead of the A2000HD, buy an A2000 and outfit it with the SCSI controller of your choice. Instead of the A2500, buy an A2000, an accelerator board (for a comparison of existing boards, see "Speed to Spare," p. 38), and a third-party SCSI hard-disk system.

Whichever controller fits your needs, enjoy the advantages that an Amiga with a hard disk brings. ■

Former Technical Editor Robert Ryan wrote this article as a going away present for his loyal AmigaWorld *readers. Address correspondence to* AmigaWorld *Editorial, 80 Elm St., Peterborough, NH 03458.*

A2000 Controllers Tests

Dperf 2.0 Test Results

DRIVE	CREATE FILES	DELETE FILES	DIR SCAN	SEEK/READ
A2090A	15/sec	45/sec	100/sec	116
HardFrame	18/sec	54/sec	103/sec	141
FastCard	14/sec	32/sec	102/sec	120
SupraDrive	15/sec	20/sec	102/sec	85
Impact A2000	13/sec	34/sec	105/sec	105
Flash!Card	13/sec	24/sec	104/sec	73
TrumpCard	14/sec	45/sec	100/sec	126

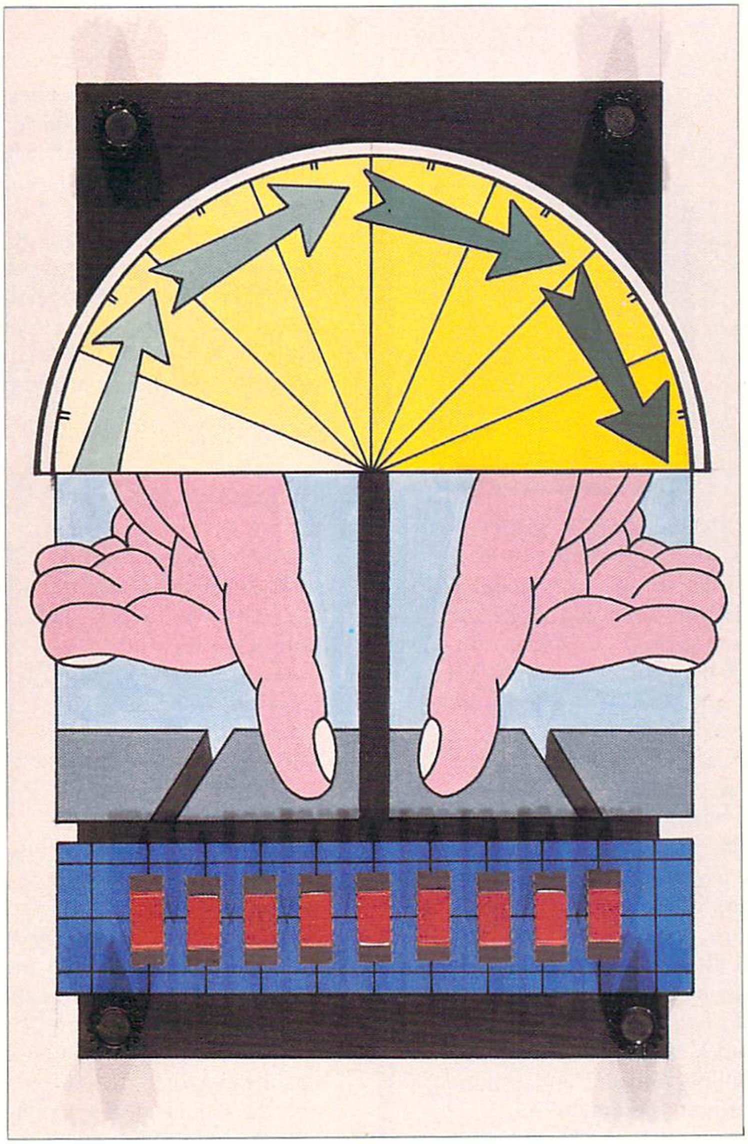
PerfTest Results
(All values in Kbytes per second)

Size	A2090A	HardFrame	FastCard	SupraDrive	Impact A2000	Flash!Card	TrumpCard
50K R	327.5/10.0	366.7/246.7	343.3/136.1	271.2/54.9	218.3/168.9	51.7/48.5	242.3/103.4
W	269.8/82.3	337.1/182.5	253.4/103.8	259.5/49.9	161.1/173.2	51.4/44.9	198.9/83.9
100K R	433.5/17.5	449.8/306.4	382.7/148.2	324.0/56.5	244.8/176.9	53.8/50.6	276.2/112.2
W	320.2/85.4	367.2/201.5	286.8/110.4	266.9/50.0	159.6/114.2	51.3/44.8	222.2/90.3
250K R	526.7/30.8	567.7/384.8	702.2/264.5	376.3/58.1	268.0/195.3	54.8/51.9	310.0/119.9
W	343.6/65.1	366.9/206.0	413.5/160.6	275.6/49.9	159.2/112.9	51.0/44.9	231.5/92.2

Note: Value to the right of the slash shows effect of displaying an overscan, hi-res, interlace, 16-color screen during I/O.

Dperf 2.0 Read/Write Test Results

Drive	Size (bytes)	Read (K/sec)	Write (K/sec)
A2090A	32K	463.2	247.3
	64K	537.2	296.9
	256K	583.8	337.4
HardFrame	32K	569.9	289.7
	64K	605.4	330.2
	256K	590.4	352.3
FastCard	32K	357.6	255.3
	64K	396.6	279.5
	256K	751.1	410.9
SupraDrive	32K	314.7	233.6
	64K	381.0	263.7
	256K	390.7	266.9
Impact A2000	32K	265.3	157.3
	64K	269.7	154.3
	256K	274.5	154.2
Flash!Card	32K	54.8	49.9
	64K	54.7	50.3
	256K	55.2	50.4
TrumpCard	32K	291.6	213.6
	64K	293.2	218.6
	256K	291.6	230.4



Amiga 500 Hard-Drive Systems

It's report card time for seven A500 turnkey hard-drive systems.

THE AMIGA 500 is no less receptive to expansion devices than the A2000, but because it lacks the A2000's slots, the A500 can support only external hard drives. Most A500 owners, therefore, find it easier to purchase an all-in-one, or turnkey, hard-disk system, which includes a controller, drive, and cables.

When faced with a display of similar looking hard drives and a fast sales pitch, you may have a difficult time ranking systems by their merits. So that you can be a prepared shopper, I tested seven systems to determine which beige boxes house the best.

As the disk's contents and file system affect its performance, I equalized the systems for the benchmark tests Dperf2 and PerfTest. (For an explanation of the tests, see Amiga 2000 Hard-Disk Controllers, p. 24.) I then formatted all the drives for the FastFileSystem (FFS) and copied only the Workbench 1.3 and Extras disks to them before running the tests.

While the best test of disk stamina is to work with the system for several months, I found no stability problems with any of the drives after several days of extensive use. ►

By Louis R. Wallace

ILLUSTRATED BY PHILIP BROOKER

Results

Escort 32MB

Escort 32MB
Expansion Technologies
$799.95
Performance: D
Ease of Installation: C
Features: D
Price: A
Overall: C

The Escort is a 32MB SCSI hard-drive system with a two-sided interface that will connect to an A500 or A1000. The low-quality hard-drive case indicates keeping the manufacturing costs down was the company's priority.

Installing the interface is easy; slide it onto the A500 expansion bus. Connecting it to the drive via the rigid ribbon cable is another matter. The cable is too short by about a foot. I was forced to twist the cable and place the drive next to the interface at approximately a 45-degree angle. The backs of the interface's and drive's metal cases were nearly touching, which gave me concerns about electrical arcing occurring.

Out of the box, the Escort is formatted for FFS use. If you want to change the specifications, for example the partitioning, you must edit the mountlist and reformat the disk. The manual contains sample mountlists for you to use as guides. While the drive will not autoboot, Expansion Technologies is planning on adding this feature.

At $799.95, the Escort is fairly inexpensive, but you only get what you pay for. The Escort ties with the Supra system for the slowest performance. It lacks an autobooting option and hardblock support, plus it offers very little installation software and a poor physical appearance. I cannot recommend it.

SupraDrive

SupraDrive
Supra Corporation
$949
Performance: D
Ease of Installation: B
Features: A
Price: C
Overall: C+

The 30MB drive (Supra makes versions from 20MB to 250MB) and interface are well constructed, and I did not have any problems setting up the system. The Supra SCSI interface installs in a few seconds. The connecting cable to the hard drive was long enough to position the drive towards the rear of the computer.

An easy-to-use utility, the accompanying SupraFormat Series II software lets you partition, format, zero, and configure the hard drive, plus select the file system. The program stores all the information on the drive, so you do not need to edit the mountlists.

In addition to autobooting, the Supra SCSI interface allows you to install RAM inside the interface (the RAM must be purchased from Supra). The advantage is that you can use one interface for both RAM and a hard disk. The RAM gets its power from the drive, so it does not detract from the A500.

With a price of $949 and read/write times of around 50K a second, the Supra system is not cheap and is not very fast either. On the plus side, the company does offer good customer support.

Impact A500-20HD/RAM

Impact A500-20HD/RAM
$795
Performance: C
Ease of Installation: A
Features: A
Price: D
Overall: B−

GVP's Impact A500-xxHD/RAM series of turnkey systems is unique, because its drives are built directly into the SCSI interfaces. Installing the 20MB version I tested was as simple as plugging the interface into the computer. An optional ($100) daughterboard mounts inside the interface and serves a dual purpose. It accepts EPROMS for autobooting and can hold up to 2MB of fast RAM.

With the hardware installed, boot with the supplied disk, and it will walk you through installing, partitioning, and formatting the drive. The program even copies Workbench 1.3 and Extras to the hard drive for you, then prepares a boot disk, complete with a startup-sequence that automatically makes the hard disk the default disk when you boot.

Because the GVP system uses a DMA controller, it is about three times faster than the Supra or Escort drives at reading (170K/second) and writing (140K/second) data. The combination of SCSI interface, hard drive, and RAM expansion makes this well-built box a very viable upgrade option. I liked it.

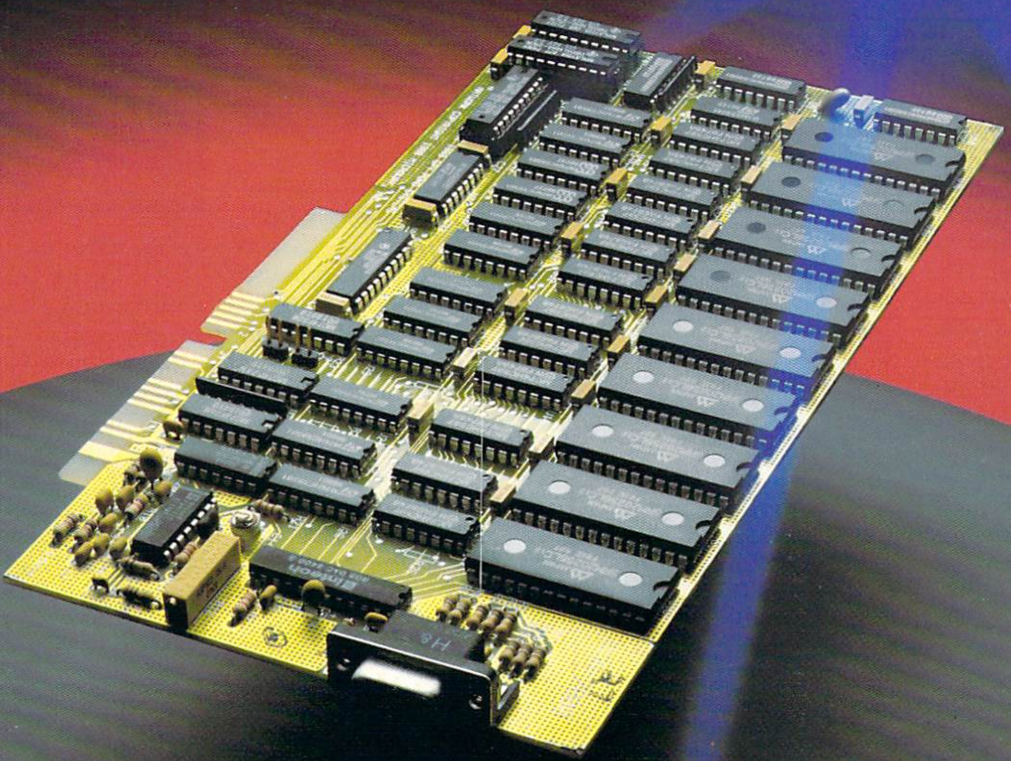
SA500/40MB

SA500 and 40MB drive
Comspec Communications
$1677
Performance: B
Ease of Installation: A
Features: B
Price: C
Overall: B

As with other SCSI interfaces, installing the SA500 was quite simple. You connect the SSD chassis hard drive and interface via a cable that is several feet long, giving you the freedom to place the drive anywhere on your desk.

The mouse-driven SetupHD program makes it very easy to select the drive type, file system, and parti- ►

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tions, and to then format the drive. The system also supports hardblocks and autobooting.

The system scored respectably on the benchmarks—225K/second for reading and 145K/second for writing. Overall, I was very pleased.

SA500/Bernoulli

SA500 and Bernoulli Drive
Comspec Communications
$1805
Performance: C
Ease of Installation: A
Features: A
Price: D
Overall: B–

I was even more impressed with the SA500 and Bernoulli removable cartridge system. The 20MB 5¼-inch Bernoulli drive is manufactured by the IOMEGA Corporation; Comspec developed the software drivers and acts as a retailer of the hardware. The Bernoulli drive is unique because it combines the speed and storage of a hard disk with the flexibility of a floppy. The advantage is obvious—virtually unlimited storage on a single drive. When one disk fills, just insert another. (A pack of three replacement 20MB cartridges sells for $293.) With a Bernoulli, backing up your hard disk is as painless as it ever will be.

Installing the interface and drive is similar to installing a traditional hard disk. The only difference lies in the SetupHD software, where you must select the Bernoulli drive from the menu of available drives. Also, unlike a floppy, the Amiga cannot detect when you remove or replace a Bernoulli disk cartridge; you must tell the system with the simple diskchange utility on the supplied disk. For convenience, you can autoboot from the Bernoulli, and it uses hardblocks to store information on the drive.

While Bernoulli drives are not known for their speed, the test unit scored twice as fast as the Escort and Supra drives—reads were at 118K/second and writes averaged 103K/second.

Expect to pay a little extra. A Bernoulli drive and SA500 interface costs about $1800 if you buy it directly from Comspec. The company recommends that American customers, however, buy only the interface and chassis from it and purchase the drive from an American outlet, which eliminates Canadian custom fees (about $400).

Fasttrak Jr. and Fasttrak

Fasttrak Jr.
Xetec
$599.95
Performance: B
Ease of Installation: A
Features: A
Price: B
Overall: B+

I tested two Xetec hard-drive systems, the Fasttrak Jr. and the Fasttrak. Both consist of a SCSI interface and an attractive expansion box, containing the hard disk, power supply, cooling fan, and a place to install optional fast RAM. The major difference between the systems is the drive they use. The Fasttrak Jr. comes with a 20MB drive and the Fasttrak uses a 40MB, high-speed Quantum drive.

To install either system, attach the interface to the A500's expansion bus, connect the hard-drive chassis to the interface with the supplied cable, and plug it in. (The hardware will support up to an additional 14 SCSI devices daisy-chained from one controller.)

The drives come formatted from the factory and ready to use. You can repartition and format them to your own specifications with the supplied software, which supports hardblocks. No messy mountlists to bother with here.

Fasttrak
Xetec
$999.95
Performance: A
Ease of Installation: A
Features: A
Price: A
Overall: A+

The Fasttrak Jr. was the second fastest drive I evaluated. When reading to the disk it reached speeds of 250K/second and could write at 198K/second, a very impressive performance for a low-cost drive.

The speed trophy, however, goes to its big brother, the Fasttrak. It was capable of reading at over 700K/second and could write at an equally astonishing rate of 415K/second! I repeated the tests several times and the drive scored consistently high, making the Fasttrak the fastest hard drive I have ever seen on the Amiga.

Recommendations

Out of the seven systems, I have two favorites. When it comes to pure performance, the Fasttrak leaves everything in the dust. It is an amazing piece of hardware, and I can recommend it highly to A500 speed demons. My second recommendation is Comspec's SA500 and Bernoulli combination. While a little on the expensive side, it offers unlimited storage in 20MB segments. You cannot go wrong either way. ■

Louis R. Wallace is a contributing editor to AmigaWorld. *Write to him c/o* AmigaWorld *Editorial Department, 80 Elm St., Peterborough, NH 03458.*

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(requires SuperGen 2000S™ and Frame Buffer)
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A500 Hard-Drive Systems Tests

Dperf 2.0 Test Results

DRIVE	CREATE FILES	DELETE FILES	DIR SCAN	SEEK/READ
SupraDrive 30MB	11/sec	22/sec	104/sec	73
Impact A500-20HD	12/sec	20/sec	104/sec	76
SA500/40MB	12/sec	28/sec	95/sec	39
SA500/Bernoulli	7/sec	11/sec	99/sec	36
Fasttrak 40MB	14/sec	31/sec	102/sec	121
Fasttrak Jr.	10/sec	12/sec	88/sec	70
Escort 32MB	14/sec	27/sec	101/sec	74

PerfTest Results
(All values in Kbytes per second)

Size	SupraDrive 30MB	Impact A500-20HD	SA500/40MB	SA500/Bernoulli	Fasttrak Jr.	Fasttrak 40MB	Escort 32MB
50K R	52.8/36.3	156.4/105.7	181.8/72.2	91.2/55.2	126.4/45.9	322.6/136.3	52.2/48.6
W	51.6/34.2	138.4/84.2	130.4/48.7	68.7/40.6	107.3/42.7	256.4/107.1	51.1/44.8
100K R	53.6/37.3	162.9/113.5	204.8/75.1	92.3/61.0	148.9/49.7	375.0/148.2	54.2/50.5
W	51.5/34.6	141.4/85.4	140.5/50.5	92.9/44.2	127.3/45.7	286.4/111.2	51.6/45.0
250K R	54.9/35.9	168.6/122.0	223.1/79.8	112.7/66.8	245.7/82.8	694.4/266.1	55.0/52.4
W	51.5/34.5	143.9/87.5	143.9/51.4	103.2/46.1	196.4/70.9	415.5/163.4	51.2/45.0

Note: Value to the right of the slash shows effect of displaying an overscan, hi-res, interlace, 16-color screen during I/O.

Dperf 2.0 Read/Write Test Results

DRIVE	SIZE (bytes)	READ (K/sec)	WRITE (K/sec)
SupraDrive 30MB	32K	54.4	50.0
	64K	55.2	51.0
	256K	55.4	51.4
Impact A500-20HD	32K	176.8	142.6
	64K	176.8	142.2
	256K	174.8	141.8
SA500/40MB	32K	197.5	125.9
	64K	217.5	137.2
	256K	226.0	145.2
SA500/Bernoulli	32K	116.2	63.2
	64K	123.6	80.6
	256K	124.5	102.2
Fasttrak 40MB	32K	360.6	253.7
	64K	400.2	274.5
	256K	740.5	418.1
Fasttrak Jr.	32K	161.7	111.3
	64K	165.6	124.1
	256K	274.4	198.3
Escort 32MB	32K	54.8	50.1
	64K	54.8	50.8
	256K	55.4	50.8

Manufacturers' Addresses

Commodore Business Machines
1200 Wilson Dr.
West Chester, PA 19380
215/431-9100

Comspec Communications
153 Bridgeland Ave.
Unit 5
Toronto, Ontario
Canada M6A 2Y6
416/785-3553

Expansion Technologies
46127 Landing Parkway
Fremont, CA 94538
415/656-2890

Great Valley Products
225 Plank Ave.
Paoli, PA 19301
215/889-9411

Interactive Video Systems
15201 Santa Gertrudes Ave.
Suite Y102
La Miranda, CA 90638
714/994-4443

MicroBotics Inc.
811 Alpha Dr.
Suite 335
Richardson, TX 75081
214/437-5330

Supra Corporation
1133 Commercial Way
Albany, OR 97321
503/967-9075

Xetec Inc.
2804 Arnold Rd.
Salina, KS 67401
913/827-0685


ABE

SPEED TO SPARE

68020 ACCELERATOR BOARDS FOR THE AMIGA

In this comparative review of three leading Amiga accelerator boards, we're heading for the open road to see which one provides the right combination of speed, performance, and price for your computing needs.

BY WAY OF automotive analogy, right from the beginning the Amiga was considered a "fast" car. Remember, though, that people who like powerful cars always seem to be looking for ways to improve their performance and make them faster.

If the profile fits you—or even if you see yourself as a more practical user whose applications simply require more computing power—then this comparative survey of Amiga 68020 accelerator boards will help you find what you're looking for. Our three subjects for the fast lane—Commodore's A2620, Ronin's Hurricane H2000, and CSA's FasTrack 2000—are all designed for upgrading the Amiga 2000. However, the latter two companies—plus one or two others—also provide accelerator solutions for A500 and A1000 systems, and we will touch on some of these in the sidebar "Accelerator Alternatives."

The heart of "accelerating" your Amiga's performance is substituting a faster, more powerful microprocessor—in this case the Motorola 68020—for your computer's standard 68000 microprocessor. (Even more powerful Motorola processors, the 68030 for example, are available, but for now we will leave these on the periphery of this evaluation.) Changing a computer's microprocessor usually requires both software and hardware modifications. Fortunately, the Amiga operating system was designed from the beginning with an eye towards upward compatibility,

By Sheldon Leemon

ILLUSTRATION BY GEORGE ABE

meaning that almost all Amiga programs run on machines equipped with the more powerful Motorola processors.

The hardware considerations, however, present a few more difficulties. The 68020 (and 68030) are not plug-compatible with the 68000—you can't simply drop the new processor into the existing socket—which means you will need an interface board. Thus we have the common denominator of all three of our contenders: an 86-pin board (which plugs directly into the A2000's CPU expansion slot) containing a 68020 32-bit microprocessor. With the Amiga 2000's easily expanded, open architecture, installing such a board presents little difficulty.

NOT JUST A ONE-CHIP MIND

What will present difficulty is not installing one of these boards, but finding a common ground to compare their capabilities and their costs. There's more going on here than just popping in a single 68020 chip. The Commodore, Ronin, and CSA accelerator solutions all provide different combinations and configurations of components. And that is why we'll need to look at some of the basics of just how accelerator boards improve performance—before we can make head-to-head comparisons among the contenders.

A number of factors account for the speed increases achieved by accelerator boards. First, the 68020 microprocessor they use has several advantages over the 68000. It has a 256-byte instruction cache, which allows short program loops to run entirely within the processor's own memory, eliminating the time required to fetch each instruction. The 68020 has additional addressing modes and instructions not found on the 68000, such as 32-bit multiply and divide operations with 32-bit results. Finally, most accelerator boards run their processors at twice the normal 7.14 MHz clock rate. This allows instructions to execute more quickly, but does not quite double program speed because the processor still must talk with 16-bit memory and the custom chips at the slower rate. Because the processor uses these slower system resources a lot, communications can slow things down considerably. Connecting 32-bit wide RAM directly to the processor helps to eliminate this bottleneck. This allows the processor to load programs into the faster memory and reduces the number of times the processor must access the slower Amiga memory when executing the program.



This also, of course, introduces another component—32-bit RAM expansion boards—into our comparison, as we shall see later.

The 68020 can also communicate with coprocessors that can perform specialized functions very quickly. One such coprocessor, called a Memory Management Unit (MMU), can be used to relocate the Kickstart ROMs to fast 32-bit memory, cutting down access time to ROM routines. An MMU is optional with the 68020, but is built into the 68030 processor. Commodore's A2620 accelerator board, however, does include an MMU while the others do not (although CSA, by virtue of the way they add 32-bit RAM expansion into their system, also have a way to relocate the Kickstart ROMs).

All accelerator boards provide a socket for 68881 or 68882 math coprocessors. These chips perform complex math operations—floating-point math—very quickly. Both the 68000 and the 68020 can perform only basic math functions; most floating-point math must be done by software. The 68881 and the even faster 68882 perform floating-point math in hardware—at dozens of times the speed of comparable software routines. The majority of programs, word processors, terminals, games, and the like, never use floating-point math, and are not affected by the presence of a 68881. Applications such as CAD packages, spreadsheets, 3-D rendering programs, and animation packages are most likely to use complex math, but even these will not necessarily make use of a math coprocessor. Except for spreadsheets, only programs written expressly for the 68020/881 combination really take advantage of the chip. The only ones of this type currently available are Sculpt-Animate 3D/4D (Byte By Byte), Turbo Silver 3.0 (Impulse), and Aegis Draw 2000 (Aegis). Again, the Commodore A2620 includes a 68881 coprocessor, while the others provide it only as an added-cost option. But for now, however, unless a program specifically states that it uses the 68881, you cannot assume that it will benefit from one—meaning that you may not need one to begin with.

The 68020's enhancements create some possibility of software incompatibility with existing Amiga applications. Fortunately, Commodore has widely publicized the rules for compatibility, and as a result, most applications run without problem on a 68020 system. The main exceptions, ironically involving software from Commodore itself, include Amiga Basic ►

Accelerator Performance Comparison

Non Floating-Point Tests

		Hurricane	A2620	CSA CPU	Midget	68000
Fast RAM	(secs)	2.60	3.50	4.00	10.10*	8.00*
Chip RAM	(secs)	9.40	9.90	15.80	11.20	8.10
RAM Speed	(MHz)	15.80	11.70	9.80	4.10	6.80
Nsieve	(secs)	.49	.49	.52	1.03	2.29
Sieve/100	(secs)	11.16	13.62	17.22	26.00	44.58
Nsieve	(gain)	4.78	4.78	4.50	2.29	1.00
CPU/Memtest	(gain)	5.02	4.15	3.17	1.57	1.02
Search/Replace	(secs)	68.70	87.10	113.90	153.40	236.60
Remap Colors	(secs)	6.30	6.30	6.70	7.50	9.30
WritePixel	(secs)	9.20	6.50	8.10	13.60	13.90

* Tests performed with 16-bit expansion RAM, not 32-bit RAM.

Fast Floating-Point Tests

		Hurricane	A2620	CSA CPU	Midget	68000
CSA savage	(secs)	10.04	14.68	18.32	27.19	54.00
Savage/FFP	(secs)	3.06	2.80	3.46	7.48	9.80
MandelTest	(secs)	85.20	118.00	147.40	211.60	423.10
Worldmap ffp	(secs)	15.40	13.20	16.20	33.20	42.10

68881 Floating-Point Tests

		Hurricane	A2620	CSA CPU	Midget	68000
Savage/020	(secs)	.34	.38	.36	.30	–
Savage/IEEE	(secs)	.68	.87	.98	1.47	–
Savage/881	(secs)	.34	.42	.38	.36	–
Mandeltest	(secs)	22.80	26.40	28.30	37.40	–
worldmap IEEE	(secs)	10.70	10.50	12.50	22.60	182.40
worldmap '881	(secs)	5.60	5.30	5.70	9.40	–
Silver render	(mins:secs)	58:21	73:02	84:36	113:11	234:31*

* Test performed with integer math version of Turbo Silver.

About the Tests

Three categories of tests were performed. The first tested applications that did not use floating-point math. The RAM speed tests (Fast RAM, Chip RAM, and RAM Speed) on the CSA disk time instructions that were executed from Fast RAM and Chip RAM with the instruction cache turned off. The Nsieve came from the CSA disk, while the other Sieve programs (Sieve/100 and CPU/Memtest) came from the Ronin disk. These run variations on a well-known program that finds prime numbers, a common test of non-floating-point compute' speed. The Search/Replace test shows the time required to perform 800 search-and-replace operations in a 96,000-character text file, using the TxEd text editor. The Remap test shows how long DeluxePaint II (Electronic Arts) took to reduce a 640×400 picture from 16 colors down to two. The WritePixel test shows how long it took to fill a rectangle on the screen with color using the ROM Kernel WritePixel function.

The second set, Fast Floating-Point Tests, show how 68020 boards can speed up operations that use the software floating-point routines. The two Savage tests show the results of a familiar floating-point benchmark, as executed by the programs on the CSA and Ronin disks. The MandelTest program, from the CSA disk, shows the time required to draw the MandelBrot set, a graphic that requires over two million floating-point operations to calculate. The Worldmap test shows the time required to draw a map of the world using a set of about 5000 coordinates and an orthographic projection scheme. This program has a greater ratio of drawing time to figuring time than the MandelTest.

The third set of tests shows how much faster the various floating-point programs executed when written to take advantage of the 68881 math coprocessor. These are mostly duplicates of the Fast Floating-Point Tests above, except that they are written to use the 68881, either directly or through the use of the Amiga IEEE math libraries. The final test shows the time to render a 3-D image of the Utah teapot in 320×400 HAM mode using the floating-point version of Turbo Silver (Impulse). The Hurricane board used a 68882 chip running at 16 MHz, the CSA FasTrack used a 16 MHz 68881, the A2620 had a 14.3 MHz 68881, and the Midget Racer used a 20 MHz 68881. □ *SL*

Accelerator Alternatives

ALTHOUGH A FULL-BLOWN 68020 accelerator with 32-bit RAM is a popular option, it is not the only way to speed up your Amiga. Creative Microsystems Inc. (CMI) markets the Processor Accelerator ($199.95), a plug-in board that contains a replacement 68000 processor running at 14 MHz, and a socket for a 68881. Though inexpensive, the board does not achieve anywhere near the speedup of a 68020 system, and the 68881 interface is useful only for spreadsheets and custom programs, not for most programs that are available in a 68020/68881 version. CMI plans to bring out a faster (and more expensive) version, the Accelerator PLUS, in the near future.

Another inexpensive alternative is CSA's Midget Racer ($399). This small plug-in board replaces the 68000 processor with a 68020 running at 7 MHz, and it has a socket for a math coprocessor. Although it does not run at a faster clock speed, or have any provision for 32-bit RAM, it still achieves a 30–100% speed increase in most applications (see "Accelerator Performance Comparison"). It also provides a standard math-chip interface for programs that are designed for the 68020/68881 combination. Unlike the full-blown 68020 boards, both the Processor Accelerator and Midget Racer can be installed in an Amiga 500 or A1000, as well as in an A2000.

For those looking for higher performance, not a lower price tag, some fast 68030 boards should soon be on the market. Great Valley Products has just introduced the Impact 030, an accelerator with a 68030 running at 16 or 25 MHz ($849 and $999, respectively, without math coprocessor). An optional daughter card will allow you to add four or eight megabytes of zero wait-state, auto-configure, non-DMA RAM. The GVP cards will also have an auto-boot, non-SCSI hard-drive controller built in. Optional EPROMs will allow you to boot from the 68000 instead of the 68030, but disabling the board not only disables the fast RAM, but the hard drive as well.

Ronin will soon release its 28 MHz 68030 Hurricane (about $3300), which will also includes a 25 MHz 68882 coprocessor, 2MB of 32-bit RAM, and a SCSI hard-drive controller. Disabling its 68030 loses the 32-bit RAM, but not the hard drive. Although priced at nearly $1300 more than the current 68020/68881/2MB fast RAM Hurricane combination, the new system may be worth it, considering that it should provide roughly twice the performance and will include the hard-drive controller. Although they have not announced any products in this category, Commodore and MicroBotics are also rumored to have 68030 accelerators in the works. □ *—SL*

(which is in the process of revision), Textcraft Plus, and the Transformer (the company's earlier and unsuccessful foray into Amiga-IBM PC compatibility).

In some cases, using programs that trap illegal instructions or turn off the instruction cache (such as TrapMoveSR and SetCPU—which will be discussed later in the article) can allow you to run nonconforming software. About the only programs that you absolutely cannot run without disabling your accelerator are some of the games, particularly those with heavy copy protection. All three of our accelerator boards, however, do not require that you actually remove the 68000 processor. Each has a switching mechanism allowing you to disable the 68020 and use the standard 68000. The A2620 allows you to select which processor to use under software control. With the Hurricane and the FasTrack, you must rig a hardware switch to a jumper on the accelerator. With all three boards, remember that disabling the 68020 also disables any 32-bit expansion memory you may have.

Speed increases achieved with accelerator boards depend greatly on the application. Floating-point math aside, they perform most operations at two to four times the speed of an unaccelerated Amiga. Programs such as word processors that do not normally seem slow may not be noticeably faster with an accelerator. The boards make the biggest difference in applications that are the slowest, and in multitasking situations, where the machine tends to bog down. A 68020 with Kickstart in 32-bit memory makes a big difference in the time it takes to redraw windows when you have a dozen or so on the screen at once.

What's on Board? And What Will it Cost?

The A2620 ($1999) comes closest to an "all-in-one" solution—but, of course, it is the most expensive when compared with the more "bare-bones" offerings of the Hurricane H2000 ($600) and the FasTrack 2000 ($995). The Commodore board, in addition to the 68020 processor, comes with a 16MHz 68881 coprocessor, running at 14.3 MHz, and two megabytes of 32-bit RAM, so there is nothing extra to buy. If you want to replace the math chip with the faster 68882 (price depends on which third-party supplier you use), you can unplug it, plug in the new chip, and then solder in the clock crystal. You will still have the slower chip left over, however, because you cannot buy an A2620 without the 16 MHz 68881.

It is possible to upgrade an A2620 to 4MB of 32-bit RAM, but to do so you must solder in 16 RAM chips (256 × 4 Zips), a job best left to "qualified service personnel." Although the 32-bit memory runs with one less wait state if you use 80ns parts, the A2620 comes with 100ns RAMs, which means that you cannot take advantage of this feature unless you care to unsolder and replace your original chips. Unlike the other two boards, the A2620 also includes a 68851 ►

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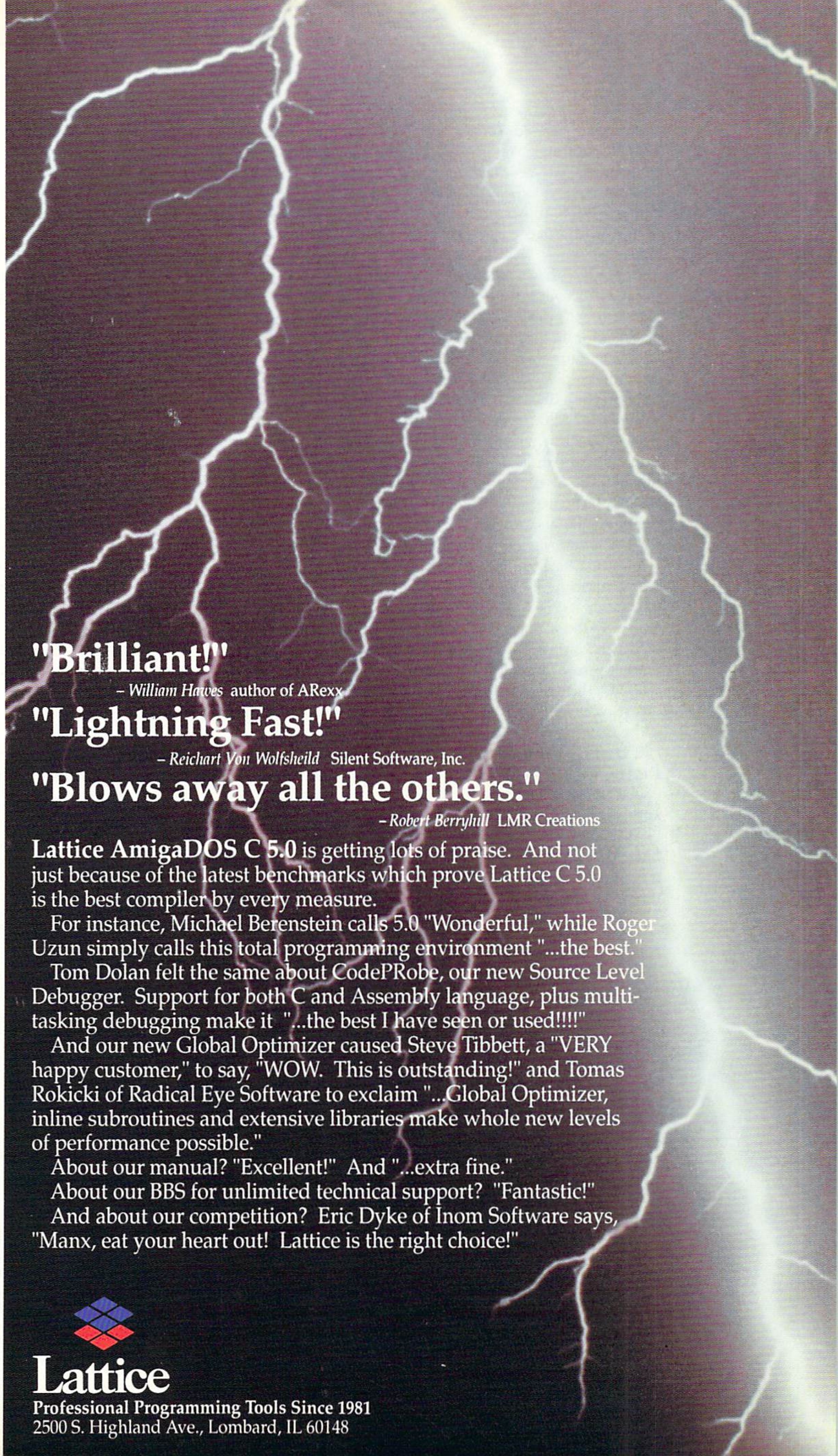
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MMU chip, mainly so that it will run Commodore's soon-to-be-released version of the Unix operating system. Although AmigaDOS cannot use the MMU to protect one task's memory space from that of another task, with the appropriate software, the MMU can be used to move the Kickstart ROM to 32-bit fast memory, to speed up access to the ROM Kernel routines.

Both the FasTrack and Hurricane boards offer a great many configuration options. Both boards come with a 68020 processor, running at 14.3 MHz, and a socket for an optional 68881 or 68882 coprocessor, running at up to 25 MHz. Both CSA and Ronin offer an optional piggyback board that lets you replace the 68020 with a 68030 processor. (CSA's 68882 is $995; Ronin's is $620; both are of the 25 MHz variety.) Both also allow you to add optional 32-bit memory boards. The Hurricane memory board ($500 unpopulated plus $340 for each megabyte) plugs into a socket on the main board. The two boards are bolted together like a sandwich, which causes the memory card to hang over just far enough to make it difficult to mount a hard-disk card in the first expansion slot. The Hurricane memory board is socketed for either one megabit (256 × 4) or four megabit (1024 × 4) RAM chips. Memory may be added in increments of 1MB using the smaller chips, or 4MB using the larger ones, up to a maximum of 4MB or 16MB, respectively. Of the three accelerators, only Hurricane memory runs at zero wait states using 100ns parts, giving it the fastest RAM access.

CSA offers two kinds of 32-bit memory boards. The FastPac ($3295, including 2MB) is a fast static RAM board, while the Dragstrip ($795 for the converter and connector boards only) allows the use of two 16-bit dynamic memory boards as 32-bit RAM. The Dragstrip consists of a 16-bit to 32-bit converter board that plugs into the A2000 expansion slot closest to the CPU slot, and a "StepLadder" connector, which is a board with sockets for the converter and for two 16-bit memory boards, such as Commodore's A2058 ($799 for each 2MB board). When the FasTrack/Dragstrip combination is fully assembled, you end up with a stack of four boards—the CPU board in the CPU slot, the converter board in the first expansion slot, and the two memory boards in between. Because only the converter board has a bracket that screws into the back of the 2000, the whole arrangement leaves something to be desired as far as mechanical stability is concerned. Each A2058 memory board can hold two, four, or eight megabytes of RAM, which means that the two boards in the Dragstrip can add four, eight, or sixteen megabytes of 32-bit memory. In addition to RAM, both the Dragstrip and FastPac contain Kickstart ROMs that are connected to the 68020 by a 32-bit wide data path, which speeds access to the ROM routines.

The comparison chart below offers information on the base prices and the prices of optional features for the three accelerators (including both the CSA FastPac and Dragstrip memory options). Because the components of the basic boards vary for each of the three, the two "Totals" categories at the bottom of the chart should provide the best yardstick for comparison. The first total includes the 68020 processor plus 2MB of installed 32-bit RAM; the second inludes the 68020, 2MB of RAM, and a 16MHz 68881 math coprocessor.

Comparing Setup, Installation, And Performance

Of the three boards, only the A2620 has true auto-configuring memory. It consumes part of the eight megabytes allocated to expansion memory, and the operating system recognizes the expansion RAM automatically. You must run an Addmem program before the system recognizes either the Ronin or CSA memory. (Such a program, however, is included with each of their accelerator boards.) The A2620 is also ►

Accelerator Prices/Configurations Comparison

	Commodore A2620	Ronin Hurricane H2000	CSA FasTrack 2000 (w/FastPac)	CSA FasTrack 2000 (w/Dragstrip)
Base Price	$1999	$600	$995	$995
68020 Processor	✓	✓	✓	✓
68881 16 MHz Coprocessor	✓	$200	$249	$249
2MB of 32-bit RAM	✓	$1180	$3295*	$1594**
68851 MMU	✓	NA	NA	NA
TOTAL (w/68020 and 2MB RAM)	$1999	$1780	$4290	$2589
TOTAL (w/68020, 2MB, and 68881)	$1999	$1980	$4539	$2838

* FastPac with 1.5MB fast static RAM and Kickstart ROMs. With the full 2MB, but no Kickstart ROMs, the price is $3495.

** Dragstrip (converter and connector boards) is $795. Memory must be purchased separately, two boards at a time. Here a Commodore A2058 2MB board at $799 was added to the Dragstrip's $795 price in the interest of strict comparison. In actual fact, if the 2MB A2058 were being used, you would need to buy two of them ($1598) to accommodate the Dragstrip setup. Thus your actual cost would be $2393, although you would have 4MB of 32-bit RAM. This then, would also affect the prices in the TOTALs categories by the same figure of $799.

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the only board whose 32-bit memory can be accessed by DMA (Direct Memory Access) devices. This means that DMA hard-drive controllers, such as the MicroBotics HardFrame and Commodore 2090A, will speed up when used with the A2620, while they will slow down when used with either of the other boards. On the other hand, hard-drive interfaces that use processor-controlled I/O, such as Great Valley Products' Impact A2000 and Xetec's FastCard, will speed up when used with any of the three accelerators.

Installation procedures for the three boards are similar, requiring only that you remove the cover of the 2000 and plug the board into the processor socket. Because the A2620 has everything on one card, it is slightly easier to install than the Hurricane's two cards, or the four cards used by the FasTrack/Dragstrip combination. All of the installation manuals are adequate, but Commodore's is the most detailed, with diagrams showing how to remove the cover of the machine. Both the CSA and Ronin boards come with a disk containing an Addmem program, programs to turn the cache on and off, and some benchmarks. In addition, the Hurricane disk contains a number of useful programs designed to eliminate software incompatibilities, such as TrapMoveSR, which traps an instruction that is legal for the 68000 but not the 68020. Other programs can be used to patch Amiga Basic and the Transformer software to run correctly on the Hurricane. The A2620 does not come with any software, but it should have been packaged with Dave Haynie's SetCPU program. This public-domain program (Fred Fish Disk #187) lets you check for a math coprocessor or MMU, turn the instruction cache on or off, and transfer the Kickstart code to 32-bit memory. It's a must for every A2620 owner.

Performance tests (see "Accelerator Performance Comparisons") showed the Hurricane board to be the fastest, followed by the A2620 and CSA boards. The speed difference was generally only 10–20%, however, and floating-point tests were weighted somewhat by the fact that the Hurricane system tested used the more powerful (and expensive) 68882 floating-point coprocessor (although running at the same 16 MHz speed as, say, the CSA's 68881). The Ronin Hurricane with a 68881 coprocessor and 2MB of fast RAM is roughly the same price as the Commodore A2620. With a 25 MHz 68882, it is about $400 more than the A2620—about the same 20% difference noted in the floating-point tests (although the Hurricane would have scored even higher with a 25 MHz 68882 than it did with the 16 MHz one used here).

The Hurricane system is thus comparable in price with the A2620, and its memory does run at zero wait states giving it faster RAM access. Unlike the A2620, however, it dos not provide everything "all on one board" for those who want the former's all-in-one solution.

The CSA FasTrack/Dragstrip combination was not only the slowest, but also the most expensive as well, costing in relation to the A2620 only $200 less without memory boards and the 68881, and over $800 more with 2MB and a 68881 ($1600 more if you wind up using two 2MB boards to satisfy the Dragstrip's two-board approach—although that does, of course, give you 4MB of 32-bit RAM instead of 2MB). For that reason, CSA's inexpensive Midget Racer (see the sidebar "Accelerator Alternatives"), although not a full-blown 68020 accelerator, may appeal to the economy-minded Amiga owner more than the company's FasTrack.

Although the Hurricane H2000 is a close and worthy second, the A2620 is the best selection when price, performance, and convenience are taken together. Its performance is very close to the Hurricane's, while its single-board convenience, auto-configuring DMA RAM, and software processor selection add up to a list of features that is hard to beat. And its status as an official Commodore product will act as a strong inducement to other hardware manufacturers to ensure that their products are compatible with it. ■

Sheldon Leemon is the author of Inside Amiga Graphics *and other books, and he is a frequent contributor to* AmigaWorld *and other computer publications. Write to him c/o* AmigaWorld, *Editorial Dept., 80 Elm St., Peterborough, NH 03458.*

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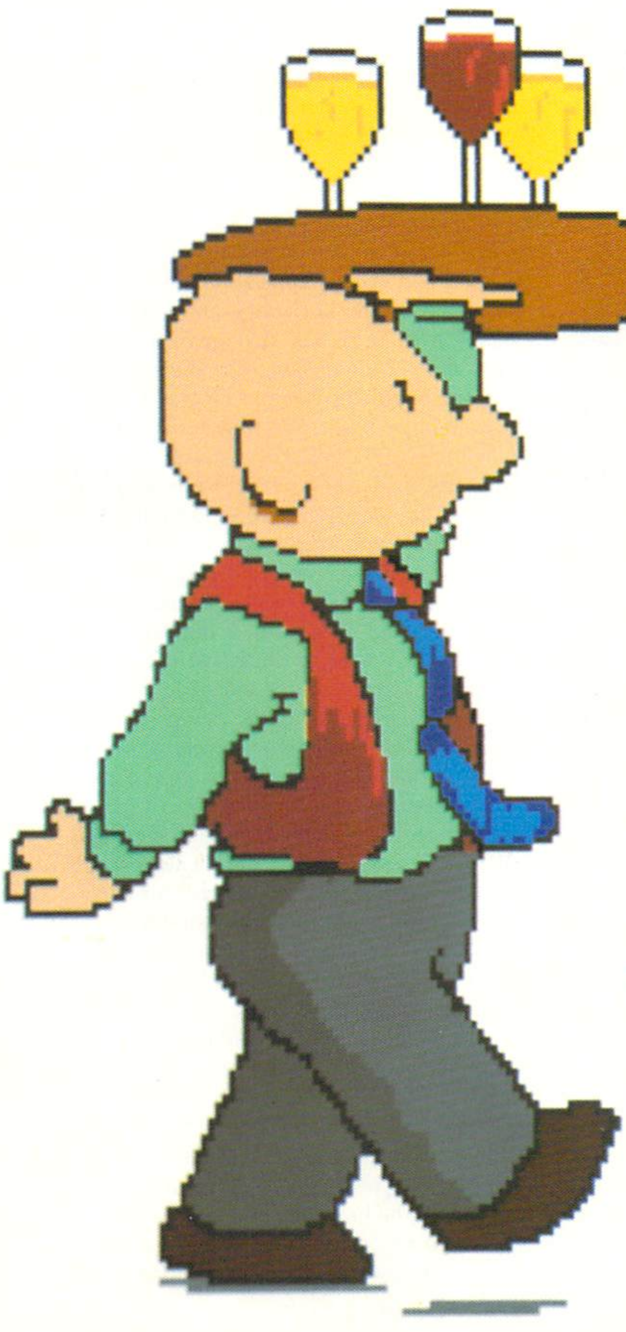
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Not Just A Paint Job



DeluxePaint III adds important new features and numerous improvements to its predecessor.

By Joel Hagen

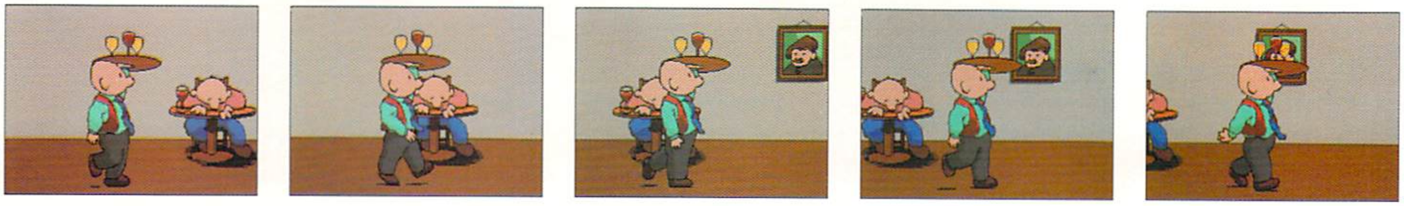
When Electronic Arts' Dan Silva decided to revise his classic DeluxePaint package, he didn't set out with a few pails of whitewash to achieve a cosmetic cleanup. DeluxePaint III is no minor upgrade, but a significantly enhanced piece of software. In addition to powerful new paint features and increased speed of operation, DPaint III introduces "Animpainting," an amazingly easy way to create high-quality animation.

Most Amiga users—or at least those with even a passing interest in graphics—are familiar with previous incarnations of the program. Over the last few years it has become a kind of de facto standard among Amiga paint programs. Therefore, rather than discuss the entire program, I will focus on the new and improved features in the current release. (For *AmigaWorld*'s review of DeluxePaint II, see May/June '87, p. 62; the original DeluxePaint was reviewed in March/April '86, p. 72.)

How Have They Changed Thee?. . .Let's Count the Ways

DPaint III supports the familiar resolutions, giving the user 32 selectable colors in lo-res and lo-res interlace, or 16 colors in hi-res and hi-res interlace. A welcome refinement, however, is the option of true painting in the Overscan mode—a great improvement over the cumbersome gymnastics required in DPaint II. Anyone working in video should appreciate this excellent feature.

New to DPaint III is the Halfbrite (i.e., Extra_Halfbrite ►



mode) option in the 32-color resolutions. This adds half-intensity shades of each color for a total of 64 colors. You can use all 64 colors with the painting tools, giving you a powerful added range of values for shading and modeling. Within the program, there is also a Halfbrite paint mode, which is designed to make it easy to paint shadows and highlights. For example, if you have painted a landscape in 32 standard colors, switching to Halfbrite mode allows you to paint over these colors, reducing them to their Halfbrite equivalents. All pattern and structure is preserved, but very convincing shadows are created. Painting in Halfbrite mode with the left mouse button reduces standard colors to their Halfbrite equivalents.

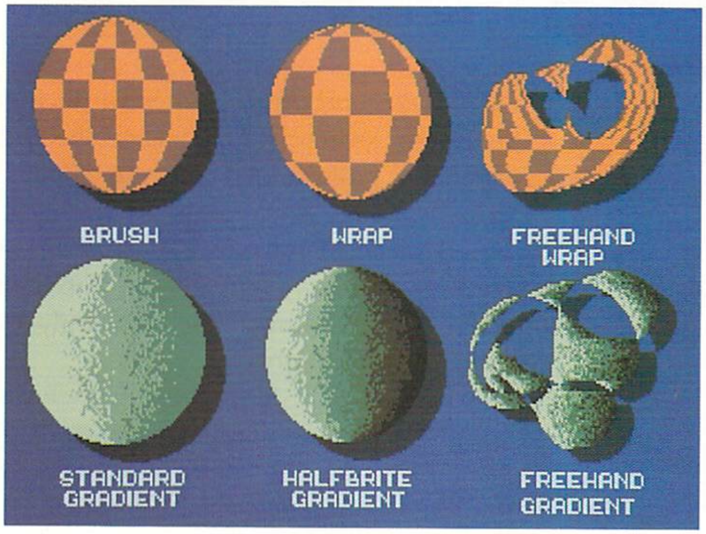


Figure 1. Some examples of new Brush fills from DeluxePaint III.

Painting with the right mouse button raises any Halfbrite colors to their full standard brightness. There is also an optional Halfbrite gradient fill that uses both the standard colors of a Range and their Halfbrite equivalents to create very subtle gradations of value. A tip to remember here is to create a Range of standard colors in which the darkest colors do not have a Value lower than 8. Thus, the top of the Halfbrite scale will begin slightly darker than the bottom of the standard scale, allowing you to maintain a smooth sequence. Many of the early Amiga 1000s do not have a Halfbrite chip, but you can purchase the chip and install it quite simply.

Tint, another new DPaint III mode, is a useful addition to the painting tools, allowing subtle changes in already painted forms. Tint uses any of the built-in brushes to replace the hue and saturation of pixels in an area with the current color while leaving the value of those pixels unchanged. The predictability of this effect depends on a well-constructed palette.

The highly effective Smooth mode has now earned a function key, F8, joining its cohorts, Smear, Shade, and Blend (F4, F5, and F6, respectively). The pointer now toggles on and off with the Delete key. It is well worth the effort to learn DPaint III's full complement of keyboard equivalents; speed and spontaneity are the rewards.

The Fill requester now has four new Fill types: Brush, Wrap, Tint, and Halfbrite. Brush fills an area with one image of the current custom brush, sizing it to fit the filled area. Wrap is similar, but adjusts the brush image to the horizontal and vertical shape of the filled area in a way that gives a very effective illusion of solid dimension. The operations are very fast, characteristic of DPaint. Tint and Halfbrite are most useful in combination with another new Fill feature; holding down ALT during a fill allows the fill to spread outward to the currently selected background color. This allows you to tint a gradient fill, or shade an entire landscape without affecting the sky.

The Continuous Freehand tool is now divided into two parts, the familiar Freehand Line and the Filled Freehand Shape. The latter is fun and easy to use, similar in many ways to the Filled Polygon but with the freedom of continuous line. You will appreciate this especially when using the Wrap fill mode. Also, if you hold down ALT when clicking on any filled shape tool, that shape is filled using the current Fill requester settings and is then traced with your current brush in the Spacing requester settings.

There are several other new features also worth noting: The spray pattern of the Airbrush tool is improved, and a new Spacing requester for the line tools has added a controllable airbrush option. You can now flip the entire screen vertically or horizontally without having to pick it up as a brush. Also, you can now place brush handles on any corner or offset them from the brush in any direction. With a Stencil turned on, picking up a brush from the screen now picks up only those areas not locked by the stencil. An Auto Transparency option in Preferences makes it easy to pick up a brush from any solid area, regardless of the background color. Preferences also has a No Icons option, which will please those who do not appreciate having precious disk space clut- ►

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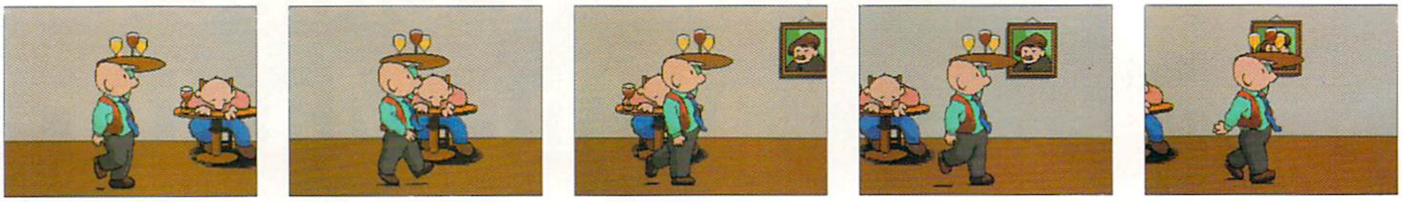
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DPaint III's new Font requester (see Figure 2) is also an excellent improvement. (Click the Text tool with the right mouse button to bring it up.) Unlike DPaint II, the updated version allows you to add almost any number of fonts to your Fonts directory. These fonts are now available to you through a scrolling list, while a "show" window lets you preview the font. You can easily specify a new disk drawer for fonts by clicking in the "drawer" box and typing a new disk directory pathname. The ColorFonts (Inter-Active Softworks) standard that is to be incorporated into the next release (1.4) of AmigaDOS is also supported. There is, in fact, a ColorFonts icon that activates the ColorFonts support.

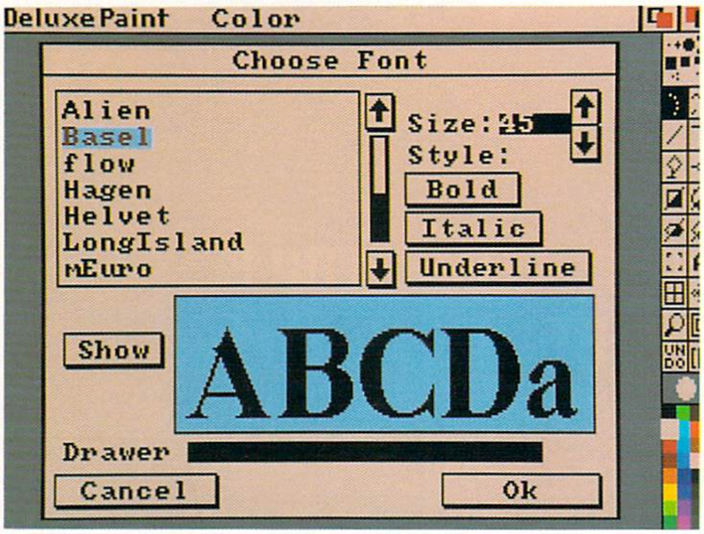


Figure 2. DPaint III's new Font requester displays a scrolling list of fonts (upper left). Notice also the "show" window (lower half of screen) where fonts can be previewed.

The Perspective section of the manual has been expanded into a comprehensive tutorial. This will clear up some of the mystery of this powerful feature for both old and new users. In addition, using the Perspective mode, you can now move a brush with the mouse while holding down CTRL. This temporarily fixes the y-axis and shifts brush movement into the x- and z-planes, giving a more intuitive feel to positioning the brush in perspective space.

All This and Animation Too . . .

As an artist, I am excited about the refinements to the graphics tools of an already excellent package. If the changes had stopped there, I would feel DPaint III was well worth the upgrade cost. In addition to all of these improvements, however, the new version includes marvelous animation features. With Animpainting you can simply specify a number of frames in the Anim menu, pick a brush, hold down the left Amiga key, and paint. You are painting on successive frames of an animation automatically. When you finish, hit the number 4 key and the animation plays back for you in a loop until you quit by hitting the space bar.

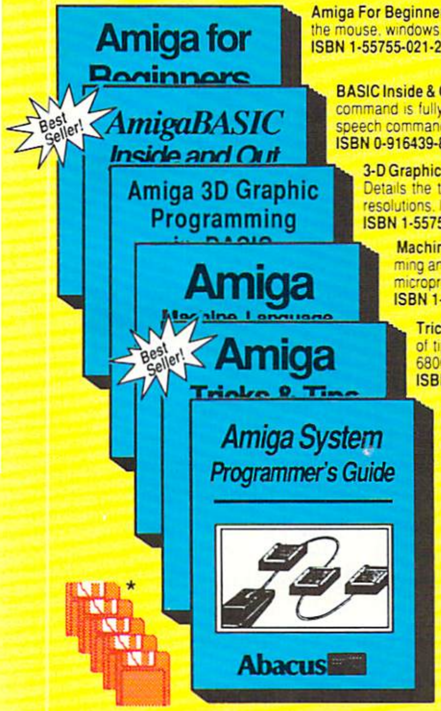
Animation can be that astonishingly simple. Results are fun and immediate, although you may not get much beyond flying balls at that most basic level. The keyboard number keys, however, provide quick control to create any animation. Numbers 1, 2, and 3, for example, allow you to move to the previous frame, next frame, or Frame requester, respectively. This allows you to paint complex animated scenes a frame at a time.

A full range of tools allows you to edit, add, or delete frames. The most powerful of these tools is the Move requester (see Figure 3). By entering distance and angle parameters, you can affect the movement of a brush in x-y-z space within a frame or through an entire animation. Instructions entered in this requester can cause a brush to perform sweeps and zooms through space, rotate on complex paths, and accelerate or decelerate with smooth precision. An excellent player program is also included.

"Animbrushes" are another interesting feature. These are actually isolated areas of animation that can be picked up like brushes, saved, loaded, and painted with. For instance, you could create an animation of a bird flying in place on the screen, and then pick up the bird as a brush. The Pick Up option will automatically capture all the frames of the animated bird. Using the Move requester with that animbrush, you could then cause the bird to flap toward the screen from a distant horizon, do a barrel roll, and zoom out of the picture. Animations can be saved as a series of IFF images, or can be compressed to conserve memory space. DPaint III supports the Anim compression format, in which a sequence is stored as an IFF animation file containing the initial scene, plus information about the changes between frames. Although the Amiga community has no universally accepted animation standard, the Anim format is supported by Videoscape 3D (Aegis), The ►

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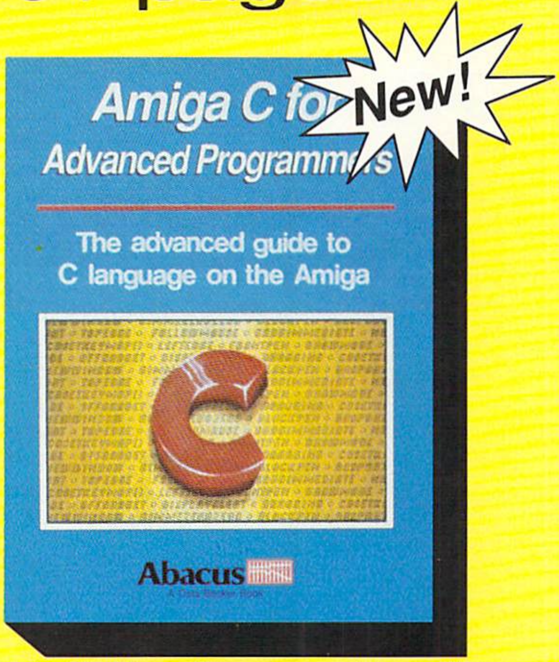
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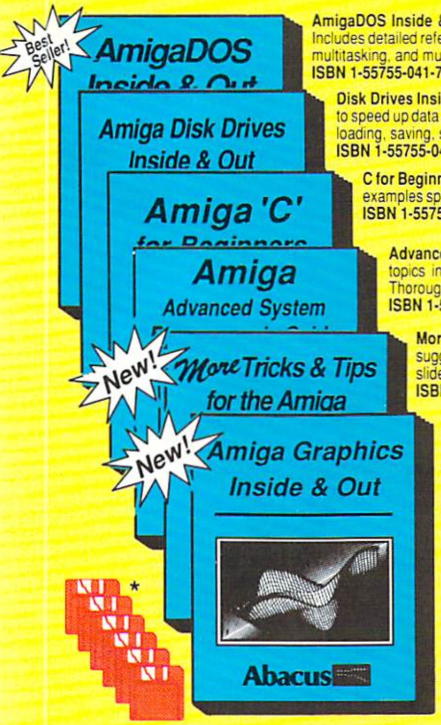
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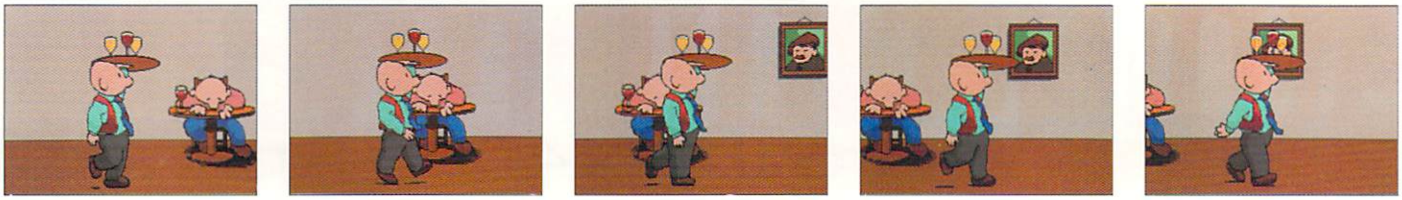
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Caveats and Conclusions

Of course, nothing is perfect (if so, there would never be any need for revised versions or further updates). My most serious problem with DPaint III came when I wanted to change the Page Size format in the middle of a painting. Be warned that you may lose the image. Electronic Arts is aware of the problem and is working on it, but for right now there are problems with this feature. For example, say you are painting in 320 × 200 mode and decide to change the Page Size to 320 × 240. Sometimes you will get the proper requester asking if you want to stretch the image, but on other occasions the program simply changes the Page Size setting—clearing the screen in the process!

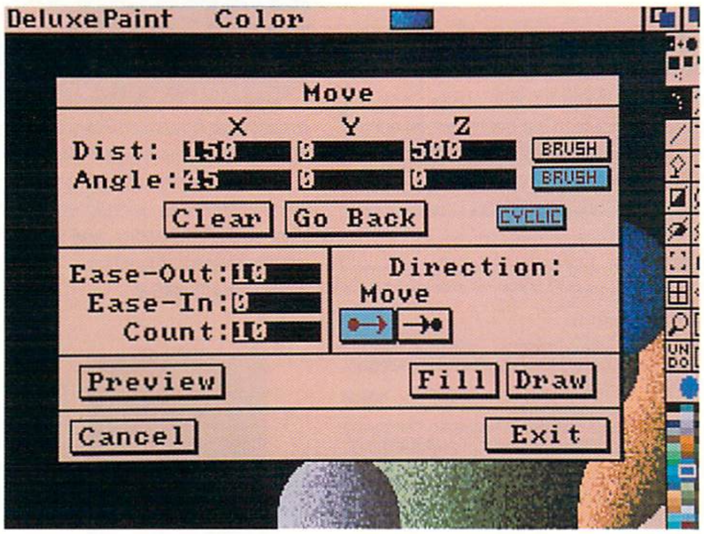


Figure 3. The Move requester is one of DPaint III's powerful new animation tools.

A few minor questions about DPaint III also surfaced as I worked through the program. First, the 0,0 coordinate point has been moved to the lower left corner of the screen instead of the upper left. The new position is the conventional spatial placement in Cartesian mathematics, but not in the computer world. I assumed this to be an oversight, as the manual still refers to the upper left 0,0 point. But in talking with Electronic Arts, I learned that the new placement is deliberate, designed to make normal screen coordinates correspond to the Perspective tool coordinates. The argument has merit, but couldn't the program provide some kind of on-off toggle option? On many occasions working with the new placement is inconvenient and could create some real problems.

I also encountered a few problems in trying to load or create overscan animations done with vertical page sizes other than DPaint's default overscan dimensions. This is a minor quibble, however, as DPaint II's overscan mode does work beautifully as designed.

Finally, Stencil is such a powerful feature, I wish it operated a bit more easily in the animation mode. Unfortunately, if you load a stencil for frame one of an animation, when you move to the next frame, the stencil is lost and must be completely reloaded.

With those caveats out of the way, some final considerations are in order. The program requires one megabyte, and that is room to do some good animation, but Animpainting is going to make people hungry for extra RAM. The more you have, the more you can do. Also, in evaluating DeluxePaint III's retail price tag of $149.95, keep in mind that DPaint I and II owners can upgrade for $50, plus $7 shipping (include the manual cover when ordering). Upgrades are only $20 if you purchased DPaint between December 1, 1988, and March 1, 1989.

DPaint III is a superb piece of graphics software. It is fast, intuitive, and practical. The manual is well written and indexed. Experienced artists or animators will find a powerful, creative, professional tool. Non-artistic novices will find a well-developed program that is fun to use and quite capable of helping them both to produce clean graphics and to learn new skills. I highly recommend this package.

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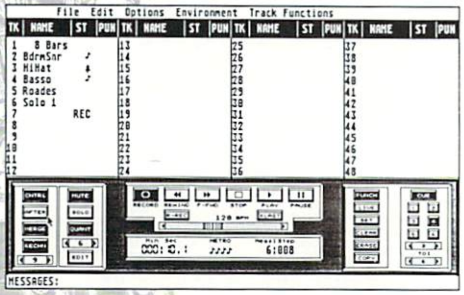


Joel Hagen is a graphic artist whose credits and projects span a fascinating range—from art to astronomy, and science fiction to software development. Write to him c/o AmigaWorld, *Editorial Dept., 80 Elm St., Peterborough, NH 03458.*

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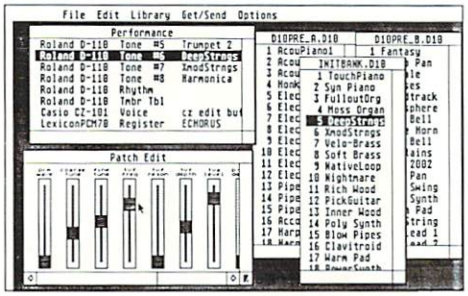
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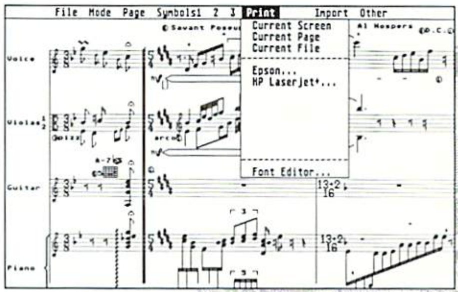


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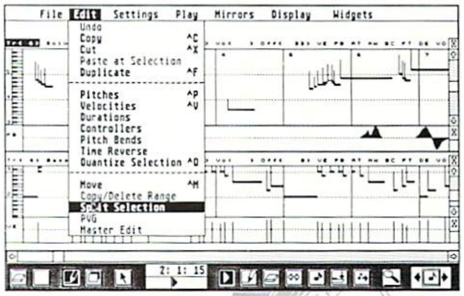
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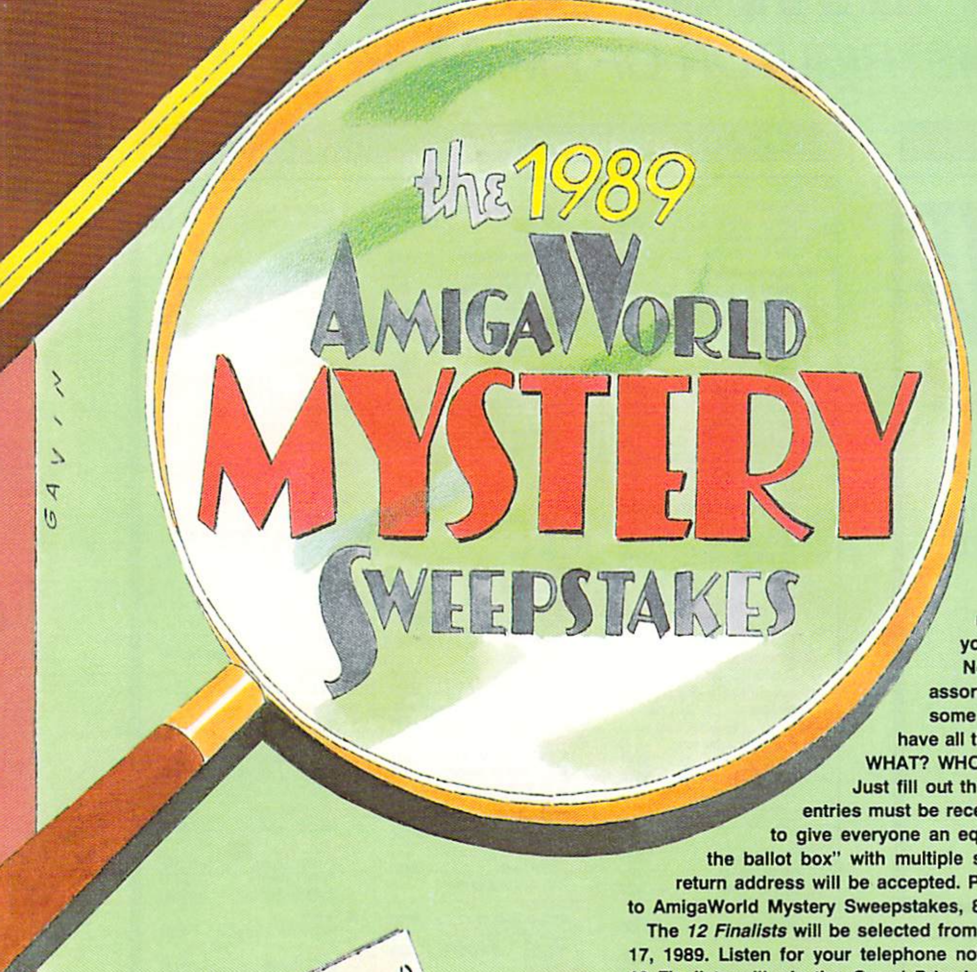
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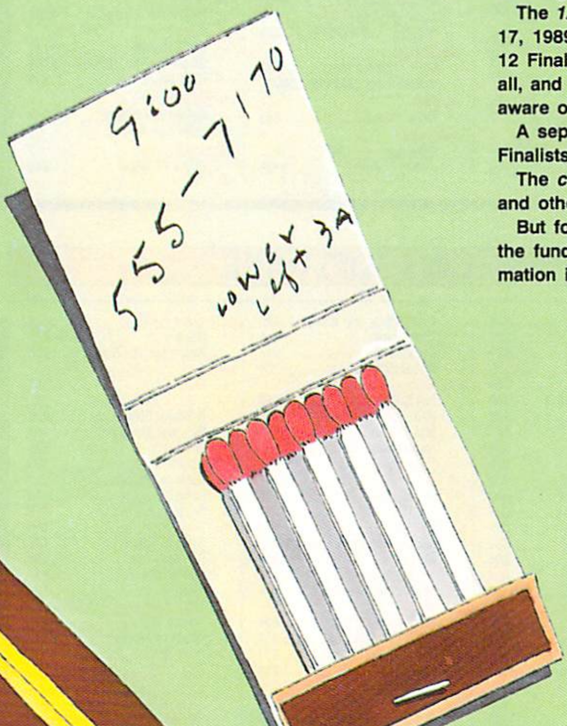
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The *12 Finalists* will be selected from a random drawing of all correct entries held on Thursday, August 17, 1989. Listen for your telephone notification that day. Confirmation will follow by mail. Which of the 12 Finalists will win the *Grand Prize* is something we cannot reveal right now. (This *is* a mystery, after all, and you know there's always going to be a final twist or two.) All 12 Finalists, however, will be made aware of how the Grand Prize winner will be selected when they are notified on August 17.

A separate *Consolation Drawing* from the remaining correct entries will be held immediately after the Finalists have been drawn. Consolation Prize Winners will be notified by mail within two weeks.

The *complete solution* to the mystery, plus the names of the Grand Prize Winner, Runner-up Winners, and other Finalists, will appear in the *October issue.* A complete list of prizes will appear in November.

But for right now, get busy absorbing some of the flavor of "Murder At Saratoga" and try to answer the fundamental preliminary question in all mysteries: WHAT HAPPENED? Remember to keep the information in Part I of our story—you'll need it for reference in Part II. The game is afoot—good luck!



The odds of winning will depend on the number of correct entries received. If the prize is not claimed, a second drawing will be held to award it. Taxes and duties on all prizes are the sole responsibility of the winner. Prizes are not transferrable, nor are they redeemable for cash value.

No purchase necessary. All federal, state and local laws apply. Void wherever prohibited by law.

Anyone of any age may enter. Minors must be accompanied by parent or legal guardian to claim the prize. If the winner resides outside the US or Canada, the Amiga 2000HD prize will be shipped to the winner at our expense. There will be no Getaway Weekend in this case.

Employees of IDG Communications Inc., its affiliates, subsidiaries, advertising and promotion agencies, and their families are not eligible to enter.

Entry constitutes permission to use the winner's name, photograph, or other likenesses for promotional purposes without further compensation to the winner. Submissions become the property of *AmigaWorld* and cannot be returned. *AmigaWorld* is not responsible for lost, misdirected, or late mail. All entries received after August 15 are void and ineligible for the drawing.

The winner and his or her companion assume all risks and dangers incidental to traveling to and from the site of the Getaway Weekend, and agree that *AmigaWorld*, IDG Communications Inc. and its affiliates, and the organizers of AmiEXPO, are not liable for any injuries, loss, or other mishaps suffered during the period specified for the Getaway Weekend.

WORTH OF PRIZES



The Grand Prize

An Amiga 2000HD
Plus
A Getaway Weekend For Two

Your *Amiga 2000HD* includes a 40-megabyte hard-disk drive, one megabyte of RAM, and a color monitor. And we'll fly you and one guest to collect your prize at *AmiEXPO* in Santa Clara, CA, at a special presentation ceremony to be held Saturday, October 21, 1989.

You'll be the personal guests of AmigaWorld at the No. 1 Amiga show in the country and receive V.I.P. treatment from AmiEXPO organizers. Our *Getaway Weekend* includes two round-trip airline tickets (depart 10/20/89, return 10/22/89) and hotel accommodations (compliments of AmiEXPO) for two nights.

The Amiga 2000HD with monitor has been generously donated by GO AMIGO! of Redwood City, CA.

Runner-Up Prizes

Second Prize
An Amiga 500

Your Amiga 500 includes 512K RAM, one disk drive, and a color monitor. This prize has been generously donated by LIGHTSPEED Distribution of Portland, OR.

Third Prize
A Xetec Hard Drive System

This 20-megabyte hard-drive system will be made available to you in whichever configuration is required by your system—Amiga 500, A1000, or A2000. This prize has been generously donated by The Software Shop of Worcester, MA.

Other Finalist Prizes

Fourth Prize
flickerFixer (MicroWay)

Fifth Prize
The Productivity Power Pack
Superbase Personal II (Precision)
Superplan (Precision)
A-Talk III (Oxxi)
SupraModem 2400 (Supra)

Sixth Prize
The Vital Video Pack
GEN/ONE Genlocking Encoder (Communications Specialties)
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Seventh Prize
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Editor/Librarian of your choice
Model-A MIDI Interface

Eighth Prize
The Gorgeous Graphics Pack
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Ninth Prize
The Helpful Home Management Pack
PHASAR (Antic)
Tax Break (Oxxi)
Microfiche Filer (Software Visions)

Tenth Prize
Super Seven Game Pack–I
Seven different Amiga game favorites

Eleventh Prize
Super Seven Game Pack–II
Seven more Amiga favorites

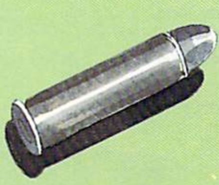
Twelfth Prize
Super Seven Game Pack–III
And still a third selection of seven!

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* This list does not include the sponsors—GO AMIGO!, LIGHTSPEED Distribution, and The Software Shop—of the three top Prizes outlined above, nor the dollar values of those prizes. Nor does it include the value of the Getaway Weekend, which cannot be determined until the winner's location is known. However, using the manufacturers' suggested retail prices for the Grand Prize and the Runner-up Prizes, and an estimated value of $1500 for the Getaway Weekend, the total value of the Contest is $25,951 when these are added to the total of the list above.





The Story



PRINCIPALS

MINDY LEE SILVERSPOON—Socialite hostess of the Travers Ball.
D.B. SILVERSPOON—The patriarch of Saratoga's first family.
JEREMIAH STONE—Wealthy breeder/owner of Rambling Boy.
HARRISON (Harry) STONE—His ne'er-do-well son.
BUFORD C. LANGTRY—Southern gentleman trainer of Dervish.
MIRANDA LANGTRY—His beautiful young wife.
JOSEPH (Big Joey D.) D'ANNUNZIO—Construction magnate.
CHERRY FLOWERS—His most recent girlfriend.
EVERETT WHITLEY—Young trainer of Rambling Boy.
CLARA GILSUM—Real estate developer and dealmaker.
WILLY McDERMOTT—Mayor of Saratoga.
BILL WALKER—Top jockey; rider of Rambling Boy.
"KID" RUSSELL—Apprentice rider of Hope's Last Chance.
"JUICE" JOHNSON—Dervish's regular jockey.
JIMMY ("The Satchel") MIKAROS—Bookmaker.
DAVIS LONGFELLOW—Local editor of *Spa City News.*
MARJORIE MACKENZIE—Struggling owner of Hope's Last Chance.
JAKE MADIGAN—Proprietor of the Bar Shoe Inn.
SYL VESTRY—Trainer of Hope's Last Chance.
ANDY AXFELD—Newspaper columnist and computer handicapper.
PRESTON GREEN—Owner of a catering business.

IT'S A LITTLE less than an hour to midnight on a warm August night in Saratoga Springs, New York, the fabled spa whose mineral baths brought the 19th century elite—Vanderbilts, Whitneys, and others of their ilk—to take the cure. This same Saratoga—which had casinos and a famous racetrack to go along with the baths—also drew another kind of elite—brash, free-spending, high-living types like Diamond Jim Brady and Lillian Russell, John "Bet-a-Million" Gates, and Richard Canfield, known as "The King of the Gamblers."

Tonight, some 75 years after the "King" played his last card, another elite is gathered in the elegant ballroom of the Canfield Casino Museum—located some 10 minutes' drive south of the racetrack—for the annual Travers Masked Costume Ball of *Mindy Lee Silverspoon* and her husband *D.B. Silverspoon.* This year's costume theme is myths of Ancient Greece and Rome.

Many of Mindy Lee's guests are celebrities—movie stars, dignitaries, and sports personalities—up to watch the famous $1 million Travers Stakes and attend the Silverspoon party. Few of these could give a hoot that a rank 100–1 dark-bay longshot called Hope's Last Chance had upset heavy Travers favorite Rambling Boy, the big red chestnut who finished dead last.

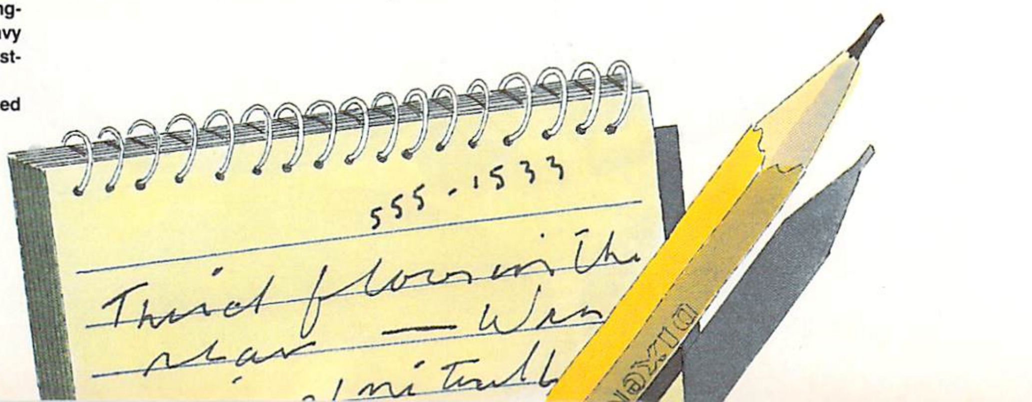
But some of the guests of Mindy Lee (dressed as Hera) and D.B. (a fitting Zeus) are quite visibly disturbed by this afternoon's shocking events at the racetrack. *Jeremiah Stone* is positively scowling behind the mask of his Midas costume. Keeping as far away from Stone and as inebriated as possible is *Everett Whitley,* a profoundly unhappy Icarus.

Just coming in the door and fitted up as a satyr, middle-aged *Buford C. Langtry,* however, seems quite bubbly—despite the fact that he withdrew his good, dark-bay stakeswinner Dervish from the Travers this morning because he thought Rambling Boy was unbeatable. The Honorary Kentucky Colonel starts chatting away at his lovely young wife, *Miranda Langtry,* attractively attired as a tall, golden-haired Aphrodite. Langtry either doesn't notice or care that his wife keeps casting expectant glances at *Harry Stone,* dressed as Bacchus, who is smirking bemusedly behind his mask from a short distance away.

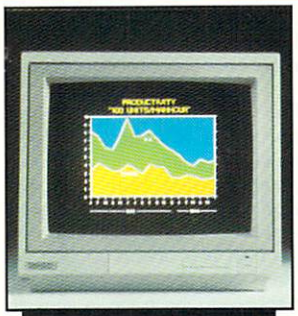
Approaching the distraught Jeremiah Stone are the colorful *Willy McDermott,* costumed as Pluto, and *Clara Gilsum,* a winsome-looking Diana. Soon all three are immersed in conversation about a project of mutual interest—the Spa City Development scheme, a proposed 12,000-acre condo-and-country club plan that will be worth millions.

Rather neglected among the throng are *Joseph D'Annunzio,* a resplendent if somewhat paunchy Mars, and his tall and curvaceous companion, Miss *Cherry Flowers,* done up as a striking blonde-haired Circe. The profits of Big Joey D.'s construction empire have made him richer than most of the "old money" in this room, but his rumored associations with mobsters, his heavy gambling, and his relationship with this woman of dubious reputation have not placed Joey at the top of the Society List. He doesn't appreciate the snub, nor the fact that he lost $50,000 on Rambling Boy in this afternoon's race.

NOT EVERYONE, OF course, is at the Silverspoons' Ball. Many of those closely connected with ►



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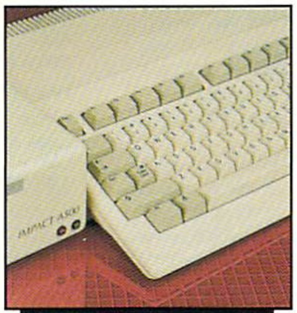
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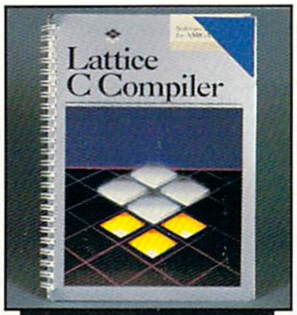
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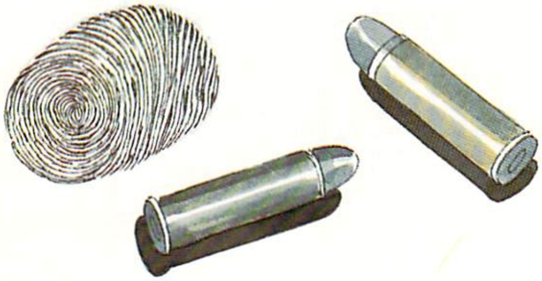
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B907



this afternoon's big event are closeted in Jake Madigan's Bar Shoe Inn—located 20-minutes' drive north of the racetrack—a local dive bar and Runyonesque haunt of less elegant participants in Saratoga's racing scene.

A group of men whose diminutive size suggests their profession occupy one table at the back. *Bill Walker*, as might be expected, is not saying much. *"Juice" Johnson* bemoans his misfortune that Dervish, who clearly looked to be Rambling Boy's toughest opponent, was withdrawn that morning from the race and could very well have been the winner if he hadn't. *"Kid" Russell* is strangely silent, considering how much money and fame have befallen him this day.

Behind the bar, the fiery-tempered but big-hearted *Jake Madigan* is serving up Chivas at a rapid pace to *Syl Vestry*, the former hard-luck trainer and now victorious conditioner of the Travers Stakes winner. Vestry's client and "Chance"'s owner, *Marjorie Mackenzie*, is celebrating with her friend and admirer, bachelor *Davis Longfellow*, who is toasting her with Madigan's house champagne—a concoction of cheap white wine with club soda added for sparkle. A practical and unpretentious widow, Marjorie won't let today's success, and the $600,000 winning owner's share (minus 10% each to the trainer and jockey) go to her head. But she is visibly relieved that the threat of impending mortgage foreclosure on her small, distinctly unfashionable Three Legs Farm is finally in the past.

At a corner table is *Andy Axfeld*, whose computer-generated "speed figures" have revolutionized wagering on horses and made their creator a national reputation in his syndicated column—not to mention several legendary scores at the racetack. Axfeld is not celebrating, as he didn't have a dime on "Chance" today and is instead pulling on his prematurely thinning hair, muttering "There's got to be something wrong here. The figures never lie; it just couldn't have happened!" Listening at his usual place next to the pay phone, reputed bookmaker *Jimmy "The Satchel" Mikaros*, who has seen *everything* happen—at least twice—replies, "People make the damnedest bets, especially in the big races."

Suddenly, Madigan announces in a loud voice to the crowd that he's closing up the joint and taking everybody over to crash the Silverspoons' big party just in time for the midnight hoopla when everyone takes off their masks. "After all, the little guys won today, so let's stick it to the swells!" Agreed that this is a splendid idea, the entire company leaves in an assortment of vehicles for the Casino.

They all arrive just before midnight and are let in through the kitchen entrance in back by Madigan's friend *Preston Green*, whose firm is catering the party. Singing and laughing, they enter the ballroom at the stroke of midnight, when traditionally the lights go out for three or four minutes while the guests take off their masks and some engage in a brief flurry of extramarital groping.

When the lights come up, the room is packed with a bizarre collection of people trying to figure out just who everybody else around them happens to be. But missing from the gathering are the following people:

Harry Stone	Everett Whitley
Miranda Langtry	Syl Vestry
Cherry Flowers	Marjorie Mackenzie
Kid Russell	Jimmy Mikaros
Bill Walker	Jeremiah Stone

One of these 10 people will be murdered before the sun rises again over the historic elms and maples of Saratoga.

"WHAT" IS GOING TO HAPPEN?

To find the answer to the first question in our Mystery Solution—WHAT?—guess the identity of the victim by a process of elimination based on ►

an assortment of numerical codes. (Positive integers only are used throughout.)

1. The victim's genetic "code": How many successful wicket pass-throughs must you have to win at (American-style) croquet? Eliminate all numbers from 1 (the lowest number in a certain range) up to and including this number. To eliminate the highest number in our range, think of "Big Stick"'s presidency. Now eliminate all numbers, inclusively, between a famous New York nightclub and a well-known magazine. Eliminate the square root of 256 and the number directly below it. Eliminate a number that would prevent there ever being a presidency like FDR's again. Again, thinking of our Chief Executives, eliminate the number of the meat between the numbers representing the slices of bread in a unique presidential sandwich. Take whatever remains in our range, translate it accordingly, and eliminate those characters in our list who do not fit this genetic criterion.

2. The victim's height: A "dossier" containing this "comedy of errors" provides the victim's height in inches. A bumbling intelligence agent is trying to track down a spy and seeks to borrow a bicycle. First, however, he can't find this particular object. Added to that, he later discovers it's already in use by someone else. In addition, when he finds another similar device—a unicycle—it can't be mounted because the seat is too high. A total mess.

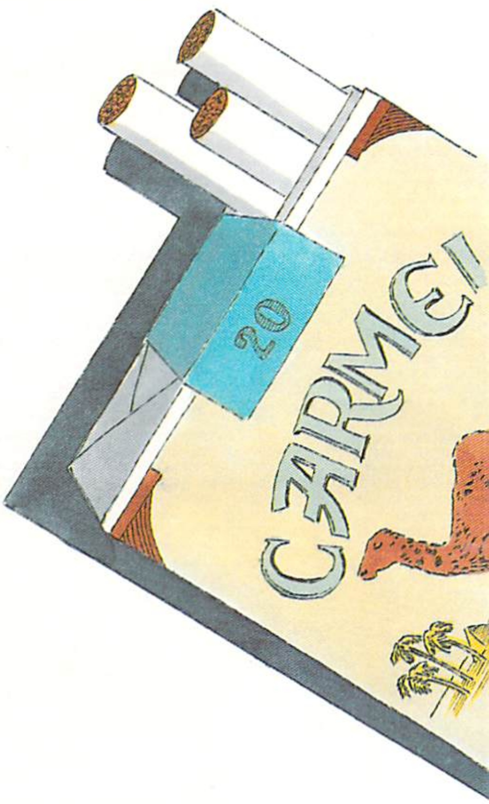
Well, at least, he thinks, he can send his report to the chief. First, however, he discovers his briefcase is locked and he has no key so that his secret file cannot be read. Plus, when he finds out he had used a disappearing-ink pen, he realizes he hadn't even been able to write the file in the first place. In addition, he wouldn't even have had a place to write it even if he had used an ordinary pen, because his worktable is completely cluttered. Again a total disaster. "Oh well," he says, "what's the difference between a big mess and an even bigger one!"

When you have your information, eliminate characters accordingly.

3. It is at this point that some "basic mistakes" could occur in identifying the victim. For instance, among the remaining names, two may claim to be temporarily devoid of memory when trying to recall their whereabouts, but it hardly means they're dead—so eliminate them from your list.

4. Now it's simply a question of the odd person out, so to speak, and that's your victim.

If you've got the intended victim, then you've got the first answer to the Mystery Solution. Stay tuned for next month's clues in the August issue to figure out WHO did it? HOW? WHEN? WHERE? and WHY? Remember, keep this month's information for reference. ■



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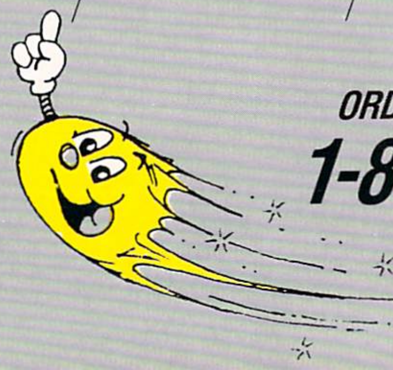
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Straight Shooting

Lethal weapons you don't need a permit for.

By B.G. Hunter

WHY DO SO many game addicts spend $20 to $50 for a game, only to play it with a cheap, $10 joystick? You wouldn't try to bag an elephant with a B.B. gun, would you? Don't skimp on your tools; the right joystick can make a huge difference in your scores and in how your hand feels afterwards.



B.G.'s weapon of choice.

Because the same joysticks work with both Atari video-game machines and Amigas, there are a ton of Amiga-compatible joysticks. I tested a cross section of them the only way that matters: by using them with some of my favorite games. When you're shopping for a joystick, no amount of description can substitute for a few minutes of actual use.

Click, Click. You're Dead

There are no hard and fast rules to picking favorite joysticks, but I do have a few personal criteria. First of all, the joystick should let me know what's happening. I want to feel and hear a click when I press the buttons or move the stick.

Some inexpensive joysticks, such as the Mazemaster (Kraft Systems, $9.95), omit this crucial feature. The Mazemaster is the cheapest joystick I evaluated. While it does have a nice, eight-foot cord, the stick feels terrible. It's mushy and offers no feedback of any kind. It also has only one button. No wonder the name Kraft is remembered only for cheese.

For five more bucks you can step up to the Winner 220 Micro Shooter (Contriver Tech, $14.95), a stick with a good, clear click. Its comfortable throttle grip has individual depressions for your fingers. Its base sports four removable suction cups that are supposed ►

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to help anchor the stick to your desk. Unfortunately, they won't stick to my wooden desk. I have mixed feelings about suction cups, anyway. They're great if you want your stick mounted firmly on a slick surface, but I generally prefer to hold my joystick in my hand when the game gets tense.

The Winner 220 also has four fire buttons rather than one—one on top of the stick, one in the finger depression, and one on each side of the base. Extra buttons can be important. For one thing, they let you change your style of play periodically. They also help combat that nemesis of the frequent game player—hand strain.

Some other joysticks go even further toward easing hand strain. The 500XJ (Epyx, $14.95), for example, is designed so that your left hand cradles the bottom of the rounded base, which is sculpted to give your fingers comfortable resting places. Your forefinger wraps around the stick and rests on the firing button. Both its button and stick click audibly. I liked the 500XJ, but after extended use, I hurt my ring finger by gripping the hard plastic case too tightly.

The more expensive Ergostick (Wico, $24.95) solves this problem with a much more comfortable case that is shaped very much like the 500XJ's. (I suspect their innards are the same, but I didn't take them apart to prove it.) The Ergostick's base is covered by a rubber-like plastic, which feels a little odd, but is very easy on the hand. Wico should have used a little of that soft plastic on the stick, because its hard plastic can leave you with a sore thumb if you play for long.

Quick Draw Lefty

While I like both of these sculpted joysticks, they are decidedly right-handed. My son, L.G., is left-handed and finds these sticks very awkward. Righties typically use their right hand to maneuver the stick, and their left to push buttons. If you're shopping for a lefty, be sure to pick a stick that a lefty can comfortably, and naturally, use.

The Ultimate Superstick (Beeshu, $39.95) appeases lefties and righties alike. It is completely symmetric, and a switch on the case lets you activate either the left or right buttons. This joystick's large base sits perfectly in my lap, and with its ten-foot cord I never have to leave my Barcolounger. The Ultimate Superstick also has variable-speed auto-fire, a feature that's a must in combat situations. I like to set one button for single-fire and the other for rapid fire.

Despite its name, the Ultimate Superstick is not the ultimate joystick. No one joystick is perfect for all games; I like to have different joysticks for different games.

Favorite Fire Power

When it's time to fly, you can't beat the Zoomer (Beeshu, $49.95). It looks and feels like an airplane yoke. Attach it to your desk with its four suction cups, pull back on the yoke to climb, and then push forward into a power dive. The button on the top of each side of the yoke has a corresponding auto-fire dial on the base. Although its design is not as good for other games, the Zoomer really makes you feel like you're a pilot. If you're serious about flight simulation games, accept no substitutes.

If you like military games, look no further than the Terminator (Star Vision, price not available). This beauty is shaped like a hand grenade. The grenade's lever is a reasonable alternative to a firing button, and the small stick is on top. Believe it or not, the Terminator is actually fun to use. Its shape conforms nicely to your hand. Its main drawback is that the firing pin keeps getting in the way.

While I still maintain that no joystick is perfect, I do have a personal overall favorite—the Advanced Gravis (Computer Technology Ltd., $49.95). It has a large base and a padded stick that makes gripping easier on the hand. Its best feature, however, is that it's programmable. A large wheel on the base lets you adjust the stick's tension from very floppy to very tight.

The Gravis also has three buttons, one on top of

Company Information

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the stick and two on the left side of the base. The buttons on the left sadly make it a primarily right-handed stick, but the one on top helps lefties a little. You can use a thumbwheel to make either one of the base buttons send an up or down joystick signal. I love having one of the side buttons set to up for playing Sword of Sodan (Discovery International); it makes jumping over barrels and heads a whole lot easier, and a whole lot more fun.

And fun, for games, is what it's all about.

Although not the type to be caged in an office, B. G. Hunter does skulk in occasionally to pick up his mail. Write to him c/o AmigaWorld, *Editorial Dept., 80 Elm St., Peterborough, NH 03458.*

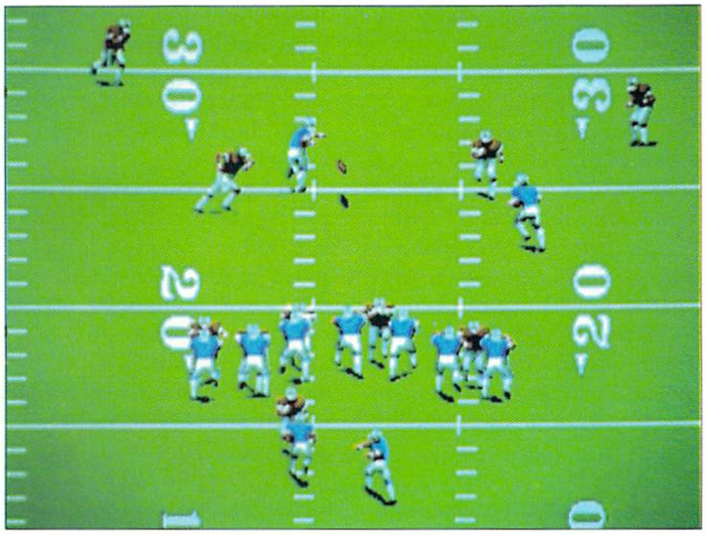
G A M E R E V I E W S

TV Sports: Football

By Bob Ryan

PLAYED AGAINST another person or the computer, TV Sports: Football puts you in charge of a football team for a single game or for an entire season.

The playing field scrolls up or down to accommodate the action by 22 animated players, one of which you control with the joystick. On the offense, you always control the man with the ball. When on defense, you choose the man you want to control. You can indentify who has the ball (and the defensive player you control) because the player's uniform blinks in two colors. The players and the field are very nicely rendered and accompanied by bone crunching sound effects.



Play one game or an entire season.

You set up your team in one of four basic formations (I-formation, pro-set, shotgun, or kick when on offense; 4-3, 3-4, 6-1, or 6-1 Key when on defense), and then choose one of four basic plays available for each formation. Although the actual number of plays is fairly limited, the variations are numerous.

Although not as detailed a simulation as Gridiron! (Bethesda Softworks), TV Sports: Football is a nice blend of strategy and arcade elements. I enjoyed playing against a friend most; the computer player was very poor at detecting my play-calling patterns.

The most fun is playing a season. After you choose your team from the 28 available, the computer sets up a schedule and begins play. The computer decides the outcome of games where both teams are computer controlled, and keeps standings and statistics. Human-controlled teams play out their games in full.

The major problem with TV Sports: Football are the TV elements—stupid full-screen pictures of the crowd, coaches, or cheerleaders—that the program sometimes shoves in front of you after a score. They add nothing to the atmosphere of the game and take exasperatingly long to load. I can't understand why the company went so far out of its way to interrupt the flow of a good game. As with commercials, the best solution is to ignore them and raid the kitchen during breaks in the action. *($49.95, Cinemaware Corp., 4165 Thousand Oaks Blvd., Westlake Village, CA 91362, 805/495-6515, 800/527-4391. Joystick required.)*

Evil Garden

By Roger Goode

YOU CENTIPEDE fans and arcade addicts had better make arrangements to have your meals served computer-side. Evil Garden, Demonware's version of the arcade favorite Centipede, will keep you glued to your Amiga.

Evil Garden pits your shooting skills against wave after wave of crazed centipedes that decend at breakneck speed from the top of the screen. With the mouse or a trackball, you control an armed craft that moves freely about the bottom third of the play area—freely that is, but for the mushrooms that spring up to get in your way. Hit one of the critters, and it breaks up into smaller segments. To clear each of the 32 levels, you must blast every segment. Levels get progressively harder, as a host of other nasty garden-variety pests attack your craft with everything but a fly-swatter. If you need help, enlist a friend to double your firepower.

Vegetables come to your aid too. If you shoot the happy- ►

faced pumpkin that occasionally bounds across the screen, an extra weapon, a shield, an extra life or a door to the next level drops down. Catch these prizes and your chances of survival increase; without them you're centipede bait.

The program itself is not free of bugs either. My copy crashed on a few occasions—frustrating, but not frequent. Evil Garden's password copy protection is troublesome, as well. When you type in the required word from the manual, the computer reads Z if you press the Y key and vice versa. If you don't compensate, you must reboot to try again. Like many games, the loading time is rather lengthy, and disk accesses between games last about a minute and a half.

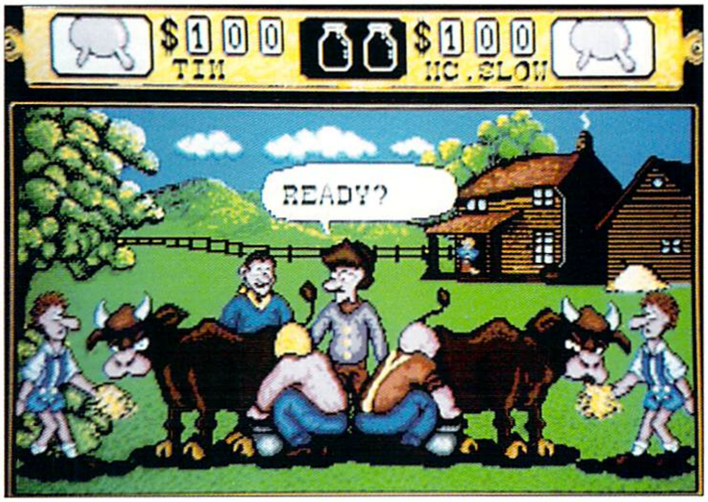
With fast-moving graphics, outrageous sound effects, more attackers, and a helpful pumpkin, Evil Garden improves on the original Centipede. I highly recommend you go bug hunting. *($39.95, Demonware, distributed in the US by American Software Distributors, RR 1, Box 290, Urbana, IL 61801, 800/225-7941. No special requirements.)*

Western Games

By Neil Randall

WESTERN GAMES IS essentially a collection of cliches, right from the moment it boots up. First thing ya gotta do, see, is decide if'n ya want one player or two, and if'n ya wanna rassle all the games or just practise up on one of 'em. And ya do this not by such sissified means as pressin' a key from the keyboard—hell, no, ya jist aim your gun 'n' hit the targit on the signpost. Then ya gitchyer name carved into another post with bullits.

Ahem, well. . .there are six games to choose from, all of them documented inside the game folder. Arm wrestling is first—you use the joystick to accumulate strength and then prop up your arm. In beer-shooting, you draw against your opponent and try to shoot a mug of beer out of the hand of a person in front of the bar. Then it's off to quid-spitting, in which you chew a quid of tobacco and spit towards your opponent.



Grab ahold an' squeeze.

Milking is a bit more civilized. Here you grab hold of a "rhythmically heaving udder" (honest! the rules say this) and milk the cow, elbowing your opponent as you do so. Next comes dancing, more civilized still, in which you use the joystick to move your character as he dances with a lovely girl. Finally, there's the endlessly civilized eating competition, where you stuff your paunch until you're ready to either vomit or die.

The graphics are amusing and well done, just like a Western cartoon. The games are also enhanced by sound effects, including crowd noises, clapping, gun shots, and even spitting and glass-breaking sounds. What isn't so pleasant is trying to play some of the games themselves. It's tough to get the arm moving in the arm-wrestling match, and figuring out how to aim at the guy with the beer is frustrating. Milking the cows is a bit easier, but dancing is next to impossible.

Seems the cowpokes that put this here package together figgered on a heap a' folks starin' at the pictures and didn't work as hard on makin' sure there weren't nothin' ta make us feel like gunnin' down the monitor. *($34.95, DigiTek Inc., 10415 N. Florida Ave., Suite 410, Tampa, FL 33612, 813/933-8023. Disconnecting 2nd drive required.)*

Corruption

By Chris Dickman

AN ILLUSTRATED text adventure, Corruption opens with the first day in your new position at a London brokerage. Ready to overachieve and wallow in success, you discover your new office contains all your old furniture, "still no phone," and a less than voluptuous secretary.

Everything in London seems rather frayed at the edges, from "tatty" corridors and broken elevators to the turn of the century plumbing in the bathrooms. When all this decay becomes too much and you venture outside the office on foot, "the stale air of the city hangs all around you, clogging your lungs." You get in your car, but the traffic is so thick you can't leave the garage.

Back in the office you find yourself embroiled in an insider trading scandal, and must clear yourself of suspicion to avoid being arrested and having your career ruined. The



Welcome to your new job.

voyage to accomplish this goal is mildly interesting, but it requires a supreme attention to detail to make sense of all the innuendo and half-truths on the way.

The manual attempts to be of some help, offering a guide to playing various casino games, which later comes in handy, as well as a small restaurant guide and pages from a daytimer with handwritten entries in the diary, address, personal information, and expense list sections. Unfortunately, the handwriting is all but illegible, making the whole thing an excercise in futility.

Not only is the story line oppressive, but the graphics are uninspired and in short supply. Stay away from this lackluster effort unless you're a hopeless adventure game addict. *($44.95, Rainbird Software, distributed by Mediagenic, 3885 Bohannan Dr., Menlo Park, CA 94025, 415/322-0900. No special requirements.)*

QUADRALIEN

By Denny Atkin

IT'S THE 21st century, and you're having a particularly bad day. Not only have you lost control of the Astra station that supplies power to all of the deep-space outposts, but the temperature in the station is rising and the nuclear core is threatening to melt down. Oh, and there's one other minor complication: the sinister Quadraliens have entered the station and the mother creature is hiding in the station's core.

Awakened from a three-week cyberslumber, your mission in Quadralien is to regain control of the station, stop the meltdown, and destroy the Quadralien mother. Because the station is highly radioactive, you must accomplish your task using six remote-control droids on the station.

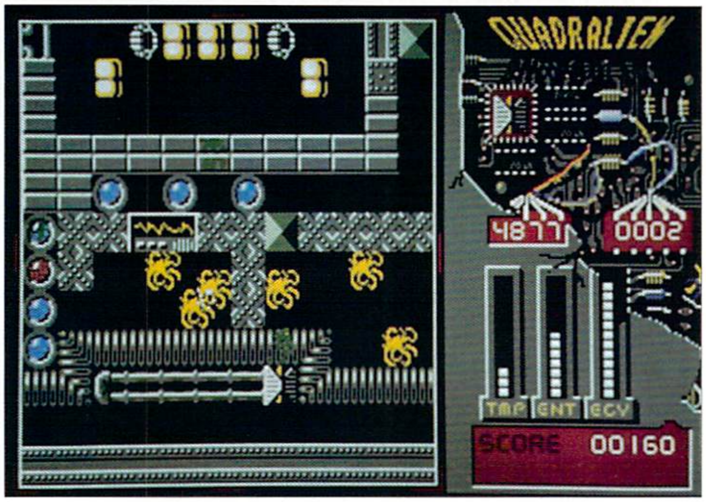
An interesting hybrid of arcade, strategy, and puzzle-oriented games, this British import sports impressive graphics, good sound effects, and an excellent musical sound track typical of European arcade games. About all ►

that's missing is understandable documentation.

While your general goals are spelled out in the instructions, the specific techniques necessary to accomplish those goals are not so clear. Trial and error will show you how to accomplish them, but the game would be much less frustrating if the tasks were explained clearly in the instructions.

radiation and reducing the entropy level, Quadralien workers start showing up to complicate things, forcing you to waste valuable power blasting them away. You must keep track of your energy level and radiation saturation while making your way through 19 different chambers before you reach the Quadralien mother.

Quadralien seems rather convoluted for an arcade



Sit back, and let the droids do the work.

If you can figure out the basics of the game, however, you'll find Quadralien an entertaining arcade game with enough strategy involved to keep your attention much longer than the average shoot-'em-up. Tasks such as pushing around slave droids or blasting radioactive panels must be accomplished in a certain order to complete a level. Just as you begin to master absorbing game, but it's this complexity that keeps the game interesting. While not recommended for the casual, 10-minute-at-a-time arcade game player, Quadralien is an entertaining, original arcade/strategy hybrid that will keep the serious game player entertained for a long time. *($39.95, Spinnaker Software, One Kendall Square, Cambridge, MA 02139, 617/494-1200. Joystick required.)*

TETRA QUEST

By Neil Randall

YET ANOTHER GAME with a premise that is virtually meaningless as far as the game itself goes, Tetra Quest is all about collecting the legendary Phoenix tablets for Phoebus the sun god. Seems the first annual Galactic Games are about to start when the news hits that the tablets have been stolen. Without the tablets, no Galactic Games. (And without a premise, no matter how contrived or convoluted, no

Amiga game either.)

Each of the six Phoenix tablets have been split into 64 pieces and scattered about the six provinces of TetraDome. TetraDome is divided into quadrants; one tablet piece is hidden on each quadrant. There are four screens in each quadrant, and on each screen there is a gold coin. To reveal the location of the tablet piece, you must collect the four gold coins in the correct order. Whew!

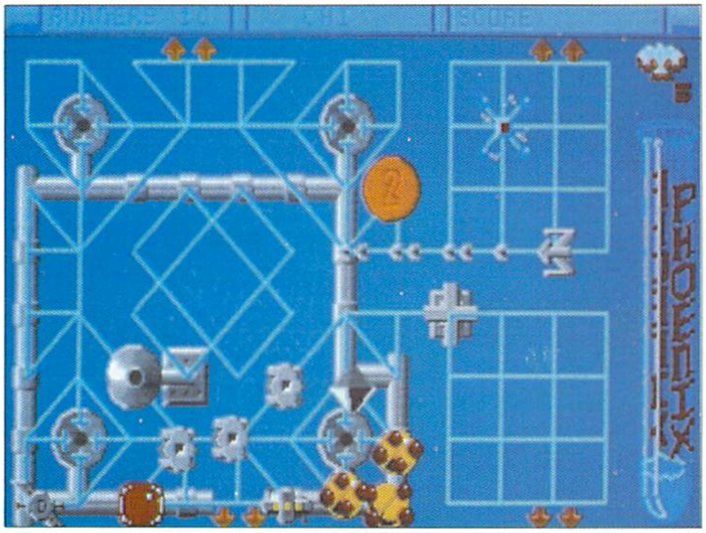
You move from screen to screen with the Tetra Runner. Each screen looks a bit like a spider web strung over futuristic piping, and your Tetra Runner follows the threads of the web. The Runner is joystick-controlled, and movement is extremely responsive.

The real challenge is figuring out how to reach each of the gold coins. The coins are numbered from one to four, and you must collect them in order. Some are easy to collect, but more often, however, you must plan your maneuvers and use gates and teleports in order to gain access to the coins.

As if figuring all this out weren't challenging enough, there's a host of meanies who spill endlessly out of the Spitter found on each screen. Acid temporarily dissolves portions of the quadrant, oil causes the Runner to spin out of control, glue sticks the Runner in place, paint leaves a trail for the baddies to follow you, and deflectors deflect your laser fire. The Spitters also spew forth things that destroy you when you collide with them. You can earn points for destroying any of these enemies.

You can also mutate into a Phoenix. Once you do this, you can move freely around the screen, which makes it much easier to get to the coins and find the tablet pieces. The trade-off is that the Phoenix consumes a tremendous amount of power, so you must use it economically.

Those who enjoy arcading with a strategic element will find themselves playing Tetra Quest often. I got through the first couple of quadrants fairly easily, but after that, things started getting more difficult. Right now, I'm trying to figure out why I can never seem to land my Phoenix in the right part of the screen. . . *($39.95, MicroDeal, distributed in the US by MichTron, 576 S. Telegraph, Pontiac, MI 48053, 313/334-8726. Joystick required.)* ■



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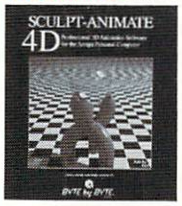
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Continued from p. 18
ination of records). I find Abacus' printer-mask implementation in particular more useful for mail-merge operations than Superbase's text editor because it affords better control over text manipulation, especially under program control.

As with Superbase Professional, you can embed complex calculations, validation sequences, and text manipulations into your forms, and add graphics data—such as lines, boxes, filled patterns, and even IFF images—to jazz up your display. Professional DataRetrieve also allows you to use multiple Amiga fonts for displaying both field data and headings, while Superbase Professional permits non-system fonts only for headings. This is a big advantage, especially on interlaced screens where the system font is too small for comfortable viewing.

Communications Skills

Both DML and PROFIL, Professional DataRetrieve's programming language, are predicated upon BASIC, so it is not surprising that the two share a number of commands and syntactical conventions. In general, however, PROFIL provides better facilities for mouse event handling, screen gadget, and pull-down menu support. Unlike Superbase, Professional DataRetrieve's program editor provides an option for compiling PROFIL programs for faster execution. In some, but not all, instances this means that compiled PROFIL programs execute faster than their DML counterparts. Generally, programs that rely heavily on nested-loop structures, complex branching, and calculations fare a bit better under PROFIL, while programs that depend on record selection, sorting, and batch updating normally run at the same speed or slightly faster under DML.

Professional DataRetrieve's documentation is a work of art. With ample tutorials and illustrations, a well-organized reference section, tab dividers, file-format and technical information, a complete table of contents, and an index in one binder, it is a joy to use.

Who Rules?

The Amiga market has been blessed with state-of-the-art database-management tools. Superbase Personal 2 offers a less-expensive alternative for serious users who are certain that they do not want or require a programmable package. Professional DataRetrieve is the first program that can legitimately claim to be in the same league with the king of Amiga database managers—Superbase Professional. With version 3.01, Precision reasserts its claim to the most sophisticated and flexible database product available for the Amiga. Its new telecommunications abilities, ARexx interface, and elegant query dialogues let it reign as the program others wish to emulate.

Superbase Professional 3.0
Precision Inc.
8404 Sterling St.
Suite A
Irving, TX 75063
214/929-4888
$349.95
One megabyte required.

Superbase Personal 2
Precision Inc.
$149.95
No special requirements.

Professional DataRetrieve
Abacus
5370 52nd St. S.E.
Grand Rapids, MI 49510
616/698-0330
$295
One megabyte required.

PageStream

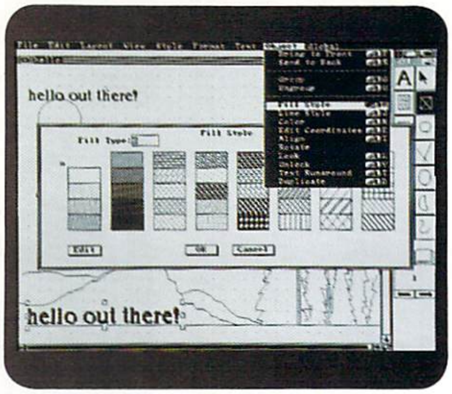
Wait on it.

By Chris Dickman

IT'S BEEN SOME time since the last flurry of excitement about desktop publishing in the Amiga community. Now the promise of Soft-Logik's PageStream has reawakened interest in the field. PageStream combines elements of PageMaker and Ventura Publisher from the IBM and Macintosh worlds with features from object-oriented draw programs and excellent use of Amiga graphics. The result is a very reasonably priced package that outputs on anything from a dot matrix to a PostScript printer. But does it have weaknesses, even bugs, you ask? I'll take that question later.

PageStream Rules

PageStream provides a rich set of options for creating and working with object-oriented graphic elements (those designed in mathematical terms). In addition to the usual box, circle, and line drawing implements, there are tools to draw arcs, elliptical arcs, and polygons, as well as a freehand tool. Creating and working with all graphics is easy thanks to PageStream's use of rulers, grids, and movable guidelines. The rulers at the top and left of the page, which track your graphics (as you move or size them) and pointer, are the cleanest of any Amiga



Get your fill in PageStream's Fill Style window.

desktop-publishing program I have seen.

The rulers, and the global measurement system itself, can be defined in anything from inches and picas to the obscure Ciceros or Didot points. Horizontal and vertical screen guides can be placed anywhere on the page, in true PageMaker fashion. This, coupled with a user-definable grid, greatly simplifies positioning, as graphics and text blocks can snap to either grid points or guides. There is room for improvement here, however. The snap-to grids and guides should work with all four sides of an object's bounding box, not just the top and left of it, and the rulers should indicate the locations of all sides of an object being moved.

PageStream copies PageMaker's versatile object-selection techniques, and goes one better by allowing you to resize whole groups of objects at once. When duplicating graphics, a requester lets you specify the number of copies you want and define the X and Y coordinates where each copy will be placed on the page. I know of no other desktop publishing program with this desirable feature. Also useful is the ability to align, slant, rotate, and twist selected objects, including text.

PICTURE THIS

The spectrum of line types you can use for drawing objects is broad, and includes different styles, widths, endings, and beginnings. You have no idea how useful it is to draw lines ending in arrows until you use a page-makeup program (such as PageMaker) that can't do it. The impressive variety of fills you can apply to objects and type will be familiar to users of paint programs. But while these fills will output on any printer, from dot-matrix to laser, being bitmaps, they cannot take advantage of the higher resolution of laser printers and imagesetters. This quality renders PageStream's fills less than ideal for use in professional-quality publications.

PageStream's graphics-file handling is less than robust. Very little is said in the manual about how the program imports, displays and prints graphics files. Support is provided for Aegis Draw Plus object-oriented images, as well as IFF, IFF-ILBM, Atari Degas, and IBM-PC IMG graphics. Because the program's function is to integrate text and graphics files, support for HAM as well as common Macintosh and IBM-PC formats would also be appropriate.

In my tests, DeluxePaint II files imported fine. Performing any operations on them took so long, however, that I often thought the system had hung... and in fact several times it had. Imported color graphics display in monochrome only, although they can print in color (or in shades of gray on a monochrome device).

Color support for graphics created within PageStream is also awkward. Although a requester is provided for you to modify current screen colors, in fact, you can change only the screen's background color. You can assign different colors to elements on the page itself, but only 16 will be displayed on screen at once—gee, almost as many as on an IBM-PC VGA display! A requester lets you define and edit colors with the usual slider bars in one of five color models—RGB (red, green, blue), HSV (hue, saturation, value), and so on. In theory, you can also define different screen representations of your colors (so that if your scene consists only of blue shades, for instance, you can distinguish between them on screen). Bugs are really in evidence here, though: Dragging the sliders produces only red, black, or blue, and the color box itself often disappears from the screen.

PageStream's bugs are especially irksome because the program has such nice capabilities as definition of "mechanical" colors to create spot-color overlays at print time or "separable" colors to create process separations. The latter is accomplished by saving your work to disk as an ASCII PostScript file and outputting it on a service bureau's high-resolution imagesetter. But the program leaves you dangling here; the output process is extremely complex, yet the manual mentions not one word about it.

PageStream uses only proprietary fonts, an approach that has failed without exception in mainstream Mac and PC desktop-publishing environments. PageStream fonts have the advantage of outputting on any printer, but are amateurish in execution and fail to let those with PostScript printers use their own high-quality fonts.

TAG—YOU'RE FORMATTED

Equipped to accept only ASCII and WordPerfect (WordPerfect Corp.) text files, PageStream's text-import capacity is weak. Its environment for formatting text, on the other hand, is admirable. As with PageMaker, you can place text and graphics that you wish to appear on all pages of your publication on a master sheet. Then, when you import and format text, all the columns will remain linked. Where PageStream really indicates promise is in its intelligent use of format styles or "tags," à la PageMaker and Ventura.

Formatting headers and subheads individually by highlighting each block of text on the page and filling out requesters to define such attributes as typeface, size, style, indents, leading, and kerning is slow when creating large documents. With the tag approach, you can specify how you want various elements formatted, and save the definitions as tags. These tags can then be quickly applied to selected text. Modifying a tag definition changes all text formatted with that tag accordingly. This makes for fast global formatting changes.

Creating tags with PageStream is a delight, thanks to comprehensive definitions and the graphic requesters. When changing interline and character spacing, for example, a requester displays two lines of text. You can type in numeric values, click on the scroll bars, or click and drag the text itself, while PageStream records the resulting spacing values. Neat! This interactive approach holds true for setting superscripts and subscripts as well as margin and paragraph indents. It beats anything I've seen in the Mac or PC environments.

WHAT COULD BE

My system hung on numerous occasions for no discernable reason. But the nastiest bug of all, one that renders PageStream in its present form unfit for use, is that it often does not redraw the screen properly. Changes you make to a tag definition sometimes do not appear until you manually redraw the screen by changing views. And when editing blocks of text, ghost images of text linger on. The rulers collect lots of extra lines or ►

PageStream's bitmap fonts
include the exotic Oriental,
just the thing for creating that
Arabian Nights atmosphere.

PageStream's page-description language allowed me to print this using an Epson 9-pin dot matrix.

display gibberish. And that's not all.

I refuse to serve as an unpaid beta tester for a company that ships virtually unusable software. If you value your time, you will, too. PageStream has such a nice design, however, and so many intelligent features that a future version is definitely worth considering. Debugged, the program would have immediate appeal to those using bitmap impact printers. For those with laser devices PageStream is less attractive, because of its use of proprietary fonts. A special version for those who require commercial-quality fonts would place PageStream in the mainstream of professional desktop publishing. With inexpensive PostScript printers about to descend on us, it just doesn't make sense for Soft-Logik to render laser fonts with its own page-description language—why not embrace an industry standard, rather than fight it? Here's hoping PageStream makes it to the big leagues.

PageStream 1.6
Soft-Logik
11131F S. Towne Square
St. Louis, MO 63123
314/894-8608
$199.95
No special requirements.

PlotPrint

A little inventiveness set askew.

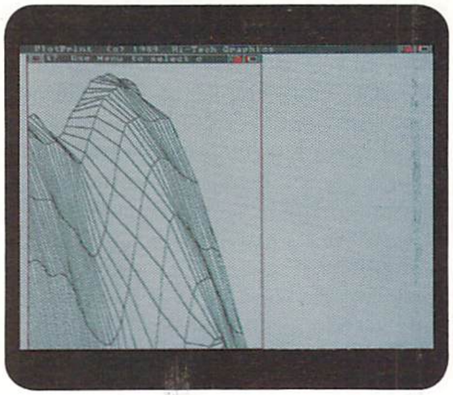
By Stephen Ellerin

YOUR CONSTRUCTION FOREMAN cannot carry an Amiga around on his hip—you need to get your large design onto paper. A plotter, the usual instrument for putting plans into print, runs at least $1500. While some CAD programs contain utilities that let you output to dot-matrix printers, none can accommodate drawings over $8\frac{1}{2}$ inches wide. Is it back to the drawing board?

Maybe not. PlotPrint, from Hi-Tech Graphics, converts Hewlett-Packard-compatible plot files to raster images that you can reproduce with almost any graphics printer. (Most CAD software supports the HP format.) PlotPrint's Rotate option lets you print drawings sideways, and thus with a wide-carriage printer you can output designs of almost any size. While this feature alone makes PlotPrint potentially useful, the program unfortunately demands that you either experiment extensively to get precisely scaled output or live with less-than-accurate results.

Up and At 'Em

A special version of PlotPrint is available for those with 68020 and 68881 boards. To install the non copy-protected program on a hard disk, you must add the command ASSIGN pp: sys: to your startup-sequence.



See your plot on screen prior to printing.

You can boot with the PlotPrint disk or start the program from Workbench or the CLI. Using either of the latter options requires that you first transfer essential files to the proper directories of your Workbench disk. For full installation, the manual says, you need a Workbench disk with 450 blocks free. (Sorry, Hi-Tech, but I think in terms of bytes.) For tight quarters, you can use the Install-Minimal option and keep the PlotPrint disk mounted.

What Do You Make of It?

PlotPrint will run your drawings one at a time, or in Batch mode, which sends several files to your printer at once. I had some difficulty in getting the print process underway because the manual lacks a straightforward explanation of setting up. While it is clear that the default mode is $8\frac{1}{2} \times 11$-inch hi-res printout to a nine-pin Epson-compatible device, the manual mentions only that you can "Find and select various SetUp files" to access other printers, sizes, and resolutions.

I was able to track down the programmer, who said PlotPrint works best with a CAD program's HP7475A plot option. He talked me through creating a custom set-up: Click on the box corresponding to the drive PlotPrint is in, select SetUps, and choose your printer from the display that appears. You will then see a list of 15 or so size and resolution options with unintelligible names.

Aside from trial and error, there is just one way to find out what an option does. Selecting it and clicking on Change puts you into the MicroEmacs text editor where you can examine the option's parameter file and compare it with the sample entries in the manual, which point out the determinants for size, density, and so forth. While this allows flexibility for making alterations, I would appreciate labeled gadgets.

Screen Test

To see your plot on screen, you must call up your HP plot file by clicking into three series of boxes. Your fourth click brings up the choices: Preview, Print, and Edit. Selecting Preview presents you with a hi-res screen into which the program slowly draws as it translates HP code into the display. When the drawing is complete, a message appears urging you to choose your next action. To avoid being thrown back to the main Action window, you must make a selection from the single menu within three minutes. If you want to plot a drawing exactly as you saved it (what you see on screen is what you'll get on paper), choose Print. Because the program is not capable of storing or manipulating screen data, however, to review or adjust the display requires that you wait again while the file redraws. The manual provides no guidance for changing the display/plot ►

parameters, but leaves you to experiment with positioning your diagram on the Preview screen.

Once, while multitasking with Draw 2000 (Aegis), I tried to output a small drawing with PlotPrint. While I had 513K free, a PlotPrint requester told me there was not enough memory to plot. The manual suggests a warm reboot to remedy this; I tried it, and, with the same amount of memory showing, output that and several larger drawings without trouble. I also multitasked with four other programs without difficulty.

PROOF OF THE PUDDING

Compared with the draw utility in Draw 2000, the most widely used of the professional Amiga CAD programs, Plot Print is more flexible, but slightly slower. With Draw 2000, you must set your background to white and all lines to black before printing. PlotPrint ignores the background and matches line colors to those of your printer, or to black in the case of a monochrome device.

Draw 2000 converts each print line from vectors to rasters as it prints, while PlotPrint completes the conversion before pins strike paper. In one test, PlotPrint took about 6 minutes to calculate and 12 minutes to print, while Draw 2000 crawled through the whole job in 10 minutes.

In Draw 2000, you can position your plot by sight: Move your cursor to the intended origin, read the x and y coordinates on screen, and type them in. With PlotPrint, you must guess coordinates until you get it right. If you lose your bearings you must enter the original coordinates from the manual; there is no easy way to return to the default settings.

Print quality from both programs is comparable—good, but not quite plotter caliber. Unfortunately, however, while Draw 2000 produces finished drawings to proper scale, PlotPrint's output, even using the default settings for the default printer, came out distorted and inaccurate. I eventually discovered that exactly reversing maximum x and y values results in almost-accurately scaled drawings.

PlotPrint is the only program I know of that can output such large designs to a printer without requiring you to tape together sheets of paper. Because it produces inaccurate results, though, the program is of little use in its current state. I hope that an upgrade simplifies the selection of printers and formats and corrects print precision.

PlotPrint
Hi-Tech Graphics
PO Box 446
Tallmadge, Ohio 44278
$50
68020/68881 version $100
No special requirements.

DESKTOP BUDGET BUDGETEER

If your personal finances resemble the national deficit, read on . . .

By Neil Randall

FOR THOSE OF us who enjoy balancing our household budgets about as much as getting a tooth drilled, Gold Disk and Prakticon offer personal-finance options to ease the discomfort.

DESKTOP BUDGET

Being a Workbench-oriented program, Desktop Budget uses what might be conceived as a "tabletop" approach to managing your money. Toss everything on the kitchen table, shuffle it around, write checks, pay bills, make deposits, and the program will give you a report on how well you're making out.

Desktop Budget comes with a very useful tutorial. Beginning with copying the single unprotected program disk, it covers the process of creating a personal budget, recording financial transactions, preparing a variety of reports, and balancing accounts. An advanced tutorial leads you through tracking automatic transactions, creating filters, and defining assets.

BANK ON IT

As with all personal-finance packages, getting started is the worst part. By defining your checking, savings, credit-card, and cash accounts in the Budget Definition window, you can create the accounts you actually have.

Creating accounts is simple. To set up a checking account, for example, choose Account from the top portion of the Budget Definition window, then Chequing from the middle portion. Name the account, then select Choose Icons. Selecting the Chequing icon from this list will put an icon that looks like a check into the display area. At this point, clicking on Add sends the icon to the Workbench.

SQUARING THE TRIANGLE

Desktop Budget distinguishes between the kinds of accounts described above and budget categories, such as income, expense, and asset accounts. You could receive money in your income account, for example, and assign it to a variety of accounts, including checking, savings, and automatic-withdrawal accounts such as insurance, mortgage, and so forth. Likewise, expenses affect both the expense account itself and either a checking or cash account. Defining an asset account means designating the purchase price of the object, its current market value, the amount of equity you have in it, and how much you plan to spend on it each month. In the case of your house, the mortgage payment is an obvious expenditure, but you should keep in mind cash-consuming repairs and improvements. If you plan to paint in the fall, budget an extra couple of hundred dollars for a September or October expenditure.

Once you have set up your accounts and budget categories, you can begin to record regular transactions. This is where Desktop Budget shines. For example, let's look at a telephone payment. If you double-click on the checking-account icon, a check form will appear. Enter the date and the amount of the payment in the space provided. Next, type in a short memo to yourself if you wish, then click on OK. An icon for that particular check now overlaps the checking account. To ►

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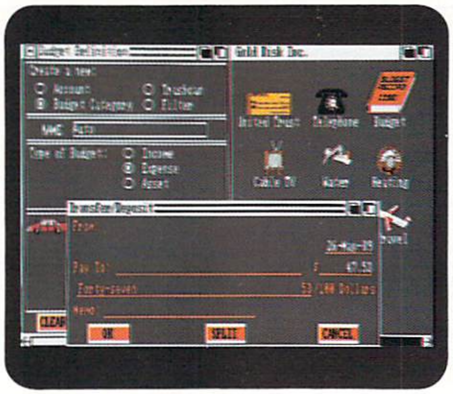
complete the payment, simply drag the check over the phone icon and release the mouse button. The program automatically adjusts both accounts.

TICKET ITEMS

You can label any transaction with one or more of eight definable tags. You might want to mark tax-deductible items, or use tags to split payments between interest and principle. You can retrieve specific reports on such designated items for a running tally. One tag, Equity, automatically adjusts the equity figure in the appropriate asset account. Splitting the mortgage payment with the Equity tag, for example, lets you keep track of to the equity on your house.

The program will also adjust and record your accounts for automatic transactions. Your paycheck will disperse into mortgage, loan, car, insurance, or any others. Desktop Budget lets you set up automatic transactions quickly. Simply split the check into several accounts and apply the tags you want. Next, bring up the Automatic Payment window. You can specify that this transaction should occur at regular intervals beginning on a specific date, or on the same day every month. If your insurance payment occurs on the 15th of every month, for example, simply click on all twelve months, then on day 15. When Desktop Budget sees the matching system date, it will automatically perform these transactions.

You can get a list of transactions at any time. Desktop Budget lets you create filters to sift out useful information. As with field-selection processes in database programs, filters let you choose a range of dollar amounts, memo wordings, check numbers, or tag types to report.



Set up your accounts and start shuffling!

Memos can include standard Amiga wildcard characters for searching, and you can also search only for automatic transactions.

THE BIG PICTURE

None of this financial activity is of any use, however, unless you can draw conclusions using reports. Desktop Budget lets you display payments within any time frame you specify, with or without tags. You can get a complete summary of transactions, accounts, assets, total income, net income, capital gains, and so on. You can sort according to best or worst accounts, dollar figures, or percent of budget. Finally, and most importantly, you can receive a net-worth report.

Desktop Budget includes an icon editor that lets you personalize symbols, and a calculator to help you figure out the mathematical details. Both utilities are easy to use.

Desktop Budget's icon system would be clumsy for the small-business user, unless accounts were kept to a minimum. For home use, however, it's a very impressive package that will go a long way in helping you get a handle on your personal finances.

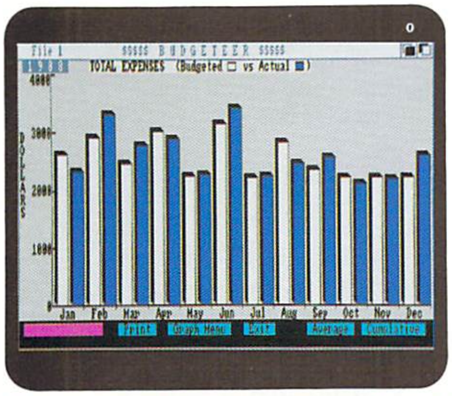
BUDGETEER

Budgeteer is a bit different: Its orientation is budgeting, not accounting. Budgeteer does not keep track of day-to-day expenses, but is concerned only with how your actual financial situation compares to your budget. Given that goal, the program is quite successful.

At first glance, Budgeteer seems to be completely without frills. Presented in compiled BASIC, the program is fairly slow, and its single-screen spreadsheet display carries none of the glitz of Desktop Budget. The program also operates without fanfare: You simply plug in numbers to see what's going on with your financial life. As it turns out, however, that straightforwardness is precisely what makes this package useful.

The problem with financial packages in general, and Desktop Budget is no ex-

ception, is that they take an inordinate amount of work. Budgeteer, except for start-up, takes almost no time at all. You merely boot up the program, load a budget form from disk, enter the data you've accumulated (once per month is ideal), display or print the charts you need, play with the budget totals, and get out. There are no accounts to set up, no year-end transfers to worry about, no bank reconciliation or check printing to be done—nothing that requires a major commitment of time. Budgeteer is a



Quick-and-easy bar charts graph your financial ups and downs.

good, solid program for those who want to keep some track of their money, but who aren't interested in full-scale treatment.

Where Does the Money Go?

You can set up multiple budgets for home and business, using the default as a guide. Down the left side of Budgeteer's screen are item names, which, for homes, will include food, heat, water, clothing, mortgage, bank loan, and so on. It also includes income items, of which Budgeteer allows only four. Across the top of the screen are the names of the months. Getting data into the cell where a month and item name meet involves selecting the Enter Data menu option, clicking on the appropriate cell, and typing the information in the data-entry requester. For example, to enter the actual amount for May's food bill, you click on the Food/May cell. A box appears into which you can enter up to four separate numbers. When you finish, the program sums your input and displays a cumulative figure in the cell on the screen. I wish the program allowed more entries, so that you could sit down at your Amiga with the month's receipts—whether you have four or ten—and enter them individually.

Within the single Income item are four sub-items that let you report on four separate incomes or income types. If both you and your spouse receive a salary, for example, and one of you freelances and consults on the side, you will probably want to list the salaries separately, then total the freelance earnings each week to enter as one item, and do the same with the consulting receipts. To add more items, Budgeteer's manual suggests you open another complete file. This option is far from satisfactory, however, as you must combine the files by hand.

See Here

A strength equivalent to Budgeteer's easy data-entry method is its instantaneous creation of multi-color pie and bar charts. After you have entered your budget figures (for a week, month, year, or any amount of time), you need only ►

select Pie Chart from the Display menu to see immediately what portions of your budget are being consumed by which expenses. Major categories are labeled individually, while lesser disbursements are grouped in the "Other" section and itemized to the right.

More sophisticated, yet just as easy to create, are the bar charts. Selecting Bar Chart from the Display menu yields a multitude of chart-type options. From the first screen you can produce a bar chart showing actual expenses or actual income, or a comparison of actual to budgeted expenses or income. By going to the second options screen, you can compare two items, or combinations of items, from any given year. The third screen consists of options for comparing budget or actual totals from two years, while the fourth offers a series of forecasting options to establish what-if figures. The charts themselves are attractively presented, and while they lack some of the options available in dedicated spreadsheet packages, they allow very useful comparisons.

All charts can be printed, as can any screen, and you can save files to disk. If you boot with Budgeteer, the program gives you the chance to load from the CLI or the Workbench.

Some home financiers will be dissatisfied with Budgeteer. It is not fancy, and its options are limited. But those wishing only a overall idea of what is going on in their financial lives might well find this package ideal. Without forcing you into the rather elaborate accounting techniques of Desktop Budget, it lets you see where you stand.

Compare Budgets

If you want a precise account of your monetary activity, along with options to reconcile your bank statement, keep track of your portfolio, print checks from your computer, and manipulate several kinds of reports, choose Desktop Budget. If your needs are much simpler, choose Budgeteer. With all the emphasis on Amiga graphics and video—and the condescending attitude many users have towards home and productivity tools—it's good to see solid applications packages with practical appeal. The question remains whether paper and pencil are every bit as effective for budget tracking, but that's a matter of preference.

Desktop Budget
Gold Disk
PO Box 789, Streetsville
Mississauga, Ontario
Canada L5M 2C2
416/828-0913
800/387-8192
$69.95
No special requirements.

Budgeteer
Prakticon Inc.
27 Hutchings Court N.E.
Medicine Hat, Alberta
Canada T1C 1G3
$39.95
No special requirements.

Microtext

A blast from the past.

By Neil Randall

BEGINNING WITH Commodore's Textcraft, WYSIWYG (What You See Is What You Get) became the dominant mode for word processors. Curiously, Anco took a step back to the early days of word processing and revived post-formatting (whereby you enter codes to trigger text variations) for use in Microtext. Unlike graphics-oriented word processors, Microtext updates the screen quickly; there is practially no delay between pressing a key and seeing the letter on the screen. What you lose, though, is the display that portrays your document as it will print, a feature many of us can no longer do without.

A Command of the Process

Microtext's screen is attractive; the large typing area is surrounded by a border. The document name appears at the top, while along the bottom is a series of style and formatting gadgets. Pressing the right mouse button brings up the menu

titles Task, Text, Mail Merge, and Fields.

At the bottom of the screen, the menu gives access to Bold, Underlined, Superscript, Subscript, Centering, Justification, Margins, Page Breaks, and a useful Remarks command, which lets you enter text that will not print. But all of this is solely mouse-driven, so that turning Bold on and then off, for example, requires two separate mouse clicks. Add to this the confusing series of formatting symbols that appears in the text to indicate what will happen when you print, and you have an unfriendly process and display.

Microtext's Task menu offers a fairly wide range of commands. Load, Save, Merge, and Output (print) are all here, as are commands for indenting, defining tabs, erasing a file, scratching a file from the disk, jumping to the beginning or end of a file, or formatting a blank disk.

The Output command lets you choose between printer and monitor; the latter selection gives you a preview of how your document will appear in type. Selecting the Output option activates a page-formatting screen. Here you define headers and footers (one-liners in three possible positions), the number of lines from top of page to the header and from the header to the start of text, the text length, the number of lines from the bottom of the text to the footer, the paper length, line spacing, single-sheet or continuous printing, and the number of the first page.

The Text menu offers block operations, and while these are restricted to cut, copy, paste, search, and replace, each is accessible via a function key. The block operations are easy to use, and they work well.

The program's interface can sometimes hinder efficiency. When you select Save or Load, for instance, a requester asks if you want to go through with the operation. The requester is unnecessary—even with Load because you can load two documents into memory simultaneously—and it quickly becomes annoying. Worse yet, if you try to Save to an unformatted or a write-protected disk, Microtext kicks you into the Workbench screen. Only through experimentation (the manual doesn't mention this) will you find that Microtext and your document are alive and well in another window.

The mail-merge feature caused my system to crash each time I used it. Because there is no way to save in ASCII format, Microtext's usefulness as a text editor is limited—you cannot import Microtext files into a more powerful formatting program. Directory access is awkward, as is use of the style commands.

While the concept of an affordable, single-disk, multitasking word processor is admirable, this implementation faltered. Microtext is just not worth buying. The public domain offers comparable programs, and all in all, AmigaDOS' Notepad is better than Microtext.

Microtext
Anco Software USA Inc.
PO Box 292
Burgettstown, PA 15021
412/947-9922
800/992-9198
$44.95
No special requirements.

PRINTSCRIPT

Now every printer is PostScript compatible.

By Morton A. Kevelson

THE DESKTOP-PUBLISHING industry relies on the PostScript (Adobe Systems) page-description language to create effective page layout via the computational hardware contained in high-end laser printers. The intermediary in the process is a PostScript interpreter. Traditionally a printer-specific program, an interpreter converts PostScript code to the dot resolution of the associated printer.

Pixelations has taken PostScript computation and interpretation from the printer to your Amiga. With PrintScript, a PostScript interpreter that surrenders printer control to Preferences, any printer for which you have a driver can work as a PostScript output device. Thus, you can preview PostScript hard- ►

copy before sending your files out to a service bureau for final rendering on an expensive laser printer.

SITTING AND THINKING

PrintScript runs only from the CLI. There are no icons, pull-down menus, or file-selection windows—in other words, it works like any ordinary PostScript interpreter.

To configure PrintScript for your printer, you simply select PrintScript's Preferences option to access Workbench printer drivers (Hewlett-Packard DeskJet users can also choose a custom driver provided with PrintScript), then choose screen frequency and screen angle. The two latter parameters determine the dithering patterns PrintScript uses to produce bitmapped graphics.

PrintScript can be run in either direct or interactive mode. In direct mode you invoke PrintScript from the CLI followed by the name of a file containing print instructions in PostScript code written with standard ASCII characters. If you know PostScript you can write these instructions yourself using any Amiga text editor that produces plain ASCII files. Alternately, you can lay out text and graphics using any program capable of generating PostScript output.

In interactive mode simply call PrintScript from the CLI without an associated file name. When you see the standard PostScript screen prompt (PS>), you can enter PostScript commands from the keyboard. As you type, PrintScript processes the commands.

SPREAD THE NEWS

The time PrintScript takes to process and print data depends on your file's complexity and the printer resolution you have selected. In my tests with both simple and complex projects using a 180 dpi (dot per inch) setting, the total operation never took less than 10 minutes and sometimes exceeded a half hour. If your printer supports multiple resolutions, you can save time by using high resolution only for final printouts. I also recommend experimenting with resolutions; using a Star Micronics NX-2400 24-pin device, I found little or no difference between the 180 × 180 dpi output and the 360 × 360 dpi output. When PrintScript finishes processing and printing a file it returns you to the CLI. You can stop the presses at any time using the Ctrl-C key combination.

While PrintScript conserves memory by processing on the fly and using data-compression techniques (a feat not easily accomplished, as PostScript creates pages in layers), it requires at least a megabyte of RAM to process simple PostScript files. (This is not bad considering that the data for a fully bitmapped page at 300 dpi requires about one megabyte.)

CALLING ON CODE

PrintScript is forgiving of errors in the PostScript program; if it encounters a program code it does not understand it presents an error message and continues processing. (You will usually get some output even if it is not what you expected.) One reason for PrintScript's forgiveness is that the program does not implement all standard PostScript commands. Approximately two dozen commands have yet to be incorporated; most notable is the lack of color support.

While PostScript-interpretive printers are typically supplied with 35 or more mathematically defined fonts, PrintScript ►

comes with only two: Tempora and Alpine. These resemble Adobe's most popular fonts—Times-Roman and Helvetica, respectively—and each is available in bold and italic versions in addition to roman. If PrintScript encounters a call for Times-Roman or Helvetica it substitutes the appropriate font. Calls for other Adobe fonts will default to Tempora.

PrintScript can scale only fonts that have metric files. All others are treated as bitmapped images by your page-layout program and hence by PrintScript as well. Programs such as PAR Software's ExpressPaint that output only bitmapped PostScript files cannot benefit from PrintScript's handling of fonts. To most effectively use PrintScript with bitmapped Amiga fonts, you should set its screen frequency to the same magnitude as the printer's resolution.

To Know Is To Love

Some knowledge of PostScript is required to understand much of the documentation, yet PrintScript does not provide background information. Also, there are no sample PostScript files contained on the distribution disk.

Once I got it running, I found that PrintScript did a commendable job of interpreting PostScript code and rendering text produced by all three of the packages I tested it with: ExpressPaint 3.0 (Brown-Wagh), excellence! (Micro-Systems Software), and PageStream (Soft Logik). PrintScript enables me to easily accomplish tasks involving text that require considerably more effort—or are impossible—using Amiga page-layout facilities. With a nine-pin printer, PrintScript's output is best suited for draft copy, but the results I obtained on a low-cost 24-pin device at only 180 dpi are truly astonishing.



This PostScript sample, which was output to a 24-pin dot-matrix printer at 180 dpi, looks great!

If you want an easy, inexpensive means for drafting PostScript files, PrintScript is for you. I look forward to the next upgrade, which promises improved algorithms to reduce time and memory requirements, more fonts, and a more intuitive interface.

Editor's Note: At press time, Pixelations informed us that the program update is due out by the time you read this. The new version is slated to feature an ARexx port, compatibility with WordPerfect (WordPerfect Corp.), and a new manual as well.

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Circle 132 on Reader Service card.

WHAT'S NEW?

For your Midsummer's Night Dreams. . .

Compiled by Jan Jackson

Right Here, On Our Stage

INTRODUCE YOUR ROLAND MT32 or D-110 synthesizer to one of **MusicSoft's Editor/Librarians** ($99.95 each). Both voice-creation, editing and management programs offer pop-up menus and roll gadgets. You can arrange and store complete unit setups to multi-timbre banks on floppy and disks. Tweak your synthesizer sounds and adjust volume and timbre settings through the graphic editing environment. Set the tone with MusicSoft, 30 N. Raymond, Suite 505, Pasadena, CA 91103, 818/449-8838. *Reader service number 548.*

Performance ($179.95) can help you cue in patch files and sequences for polished live gigs. The program, a database system that tracks MIDI information to automate MIDI setup, sends files and sequences to your MIDI when you change songs. All you need to do to load the next song is to tap once on the space bar. Performance appears courtesy of Pregnant Badger Music, 10010 Biscanewoods Way, Sacramento, CA 95827, 916/361-8217. *Reader service number 549.*

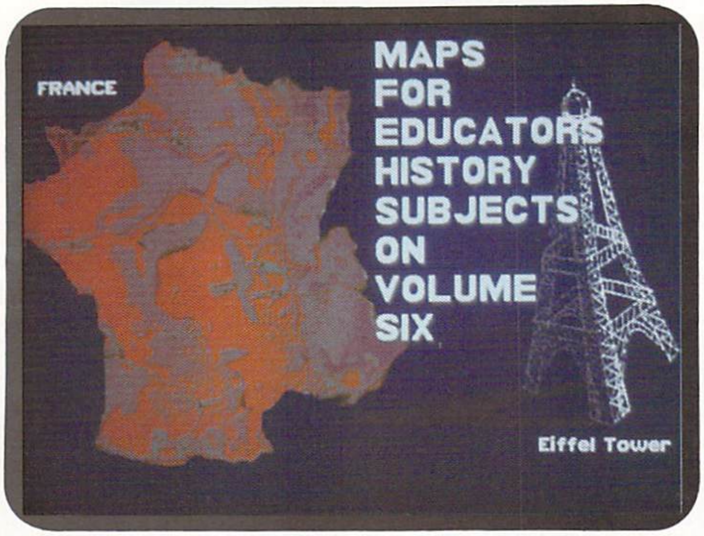
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The **Serial Interface Board II** is an A2000-style card offering you two additional serial ports. The auto-configured board takes a 64K address range, and comes with a driver and terminal software. Branch out by contacting Advanced Computer Design, Carl-Schurz-Str.11, D-2800 Bremen 1, W. Germany, +R+e49421 3499517. *Reader service number 561.*

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TRY A MODULA-2 development system from M2S for writing your large programs. **M2Sprint**, billed as a complete system, features a text editor for source preparation, a single-pass compiler, a single-pass module linker for stand-alone programs, and a symbolic debugger. Library modules cover the full Amiga operating system and offer interfaces to ARP and ARexx. The included library source code allows you to customize the program environment. The six-disk M2Sprint package retails for $385. Compile your questions and send them to M2S Inc., PO Box 550279, Dallas, TX 75355, 214/340-5256. *Reader service number 547.*

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WHO SAID
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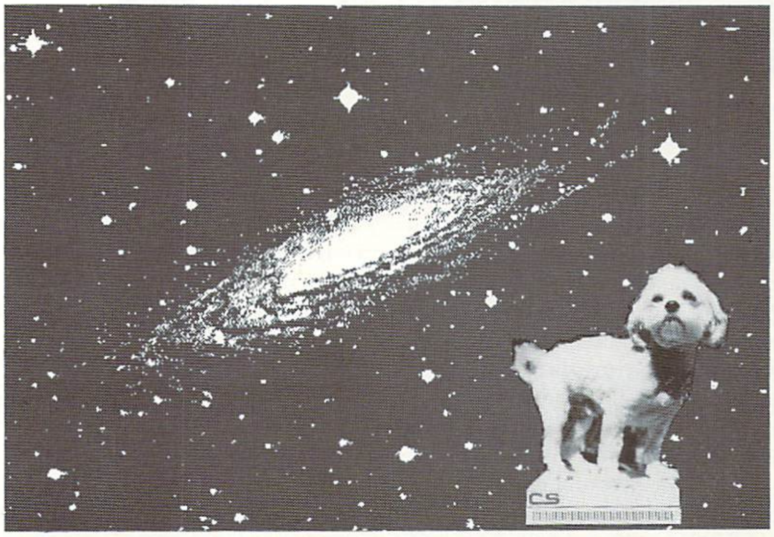


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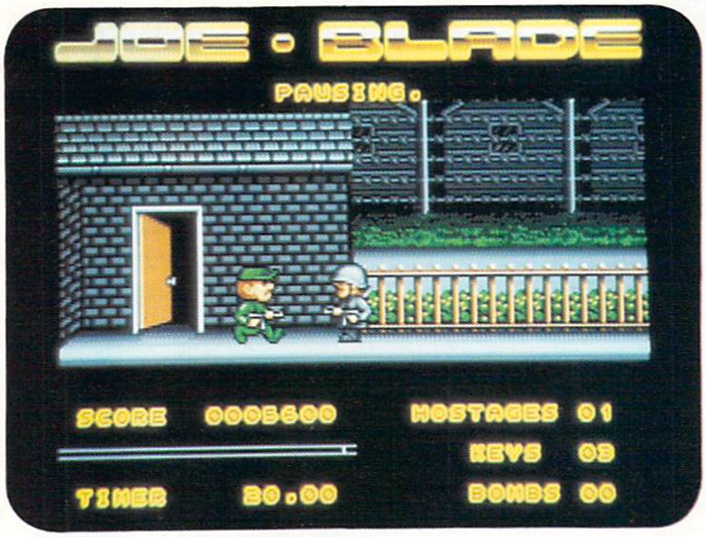
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All That You Do

LET **FINDEX V** ($49.95) help you manage your records. The storage and retrieval system promises to locate specific references in two to six seconds, while the global search feature allows you to look for any string of characters. You can use Findex V as a daily planner, memo pad, address and phone book, or to keep track of customer accounts and inventory. You can change or add information without redefining parameters, plus access, interact with, link, and rearrange data with the report/mail-merge capability. Seek out E. Arthur Brown Co., 3404 Pawnee Dr., Alexandria, MN 56308, 612/762-8847. *Reader service number 553.*

From the Mother Ship

NOW IN PORT FROM Commodore is the **A2286D Bridgeboard** coprocessor card that gives your A2000, A2000HD, or A2500 series AT-class MS-DOS (IBM) compatibility. The card, which retails for $1599, plugs into the Bridgeboard expansion slot and enables you to use AT and Amiga applications simultaneously. You get an 80286 CPU chip running at eight MHz, one megabyte of RAM and a socket for an 80287 math coprocessor. You can install AT-compatible hard cards in up to three slots on the Amiga's CPU and share a single hard disk between MS-DOS and AmigaDOS. The A2286D comes standard with a 1½-megabyte 5¼-inch floppy-disk drive. Set sail for Commodore Business Machines, 1200 Wilson Dr., West Chester, PA 19380, 215/431-9100. *Reader service number 570.*

Chip Off the Old Block

SCULPT-ANIMATE 4D Jr. ($150) is a scaled-down version of Byte by Byte's professional 3-D animation package. The program calculates perspective, illumination, and inbetweening, and offers control object rotation, camera movements, timing, and action with a graphical interface. A real-time preview feature lets you see a wire-frame rendition of your animation. Call Byte by Byte, Arboretum Plaza II, 9442 Capital of Texas Hwy. N., Suite 150, Austin, TX 78759, 512/343-4357. *Reader service number 571.*

The Director's Chair

ADD PRERECORDED SOUNDS to your animations with **ANIMATION:Soundtrack** ($119.95). This sound- and animation-editing program works with sound digitizers, and by using the Amiga's multitasking, synchronizes your soundtrack with your animation.

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ANIMagic, an animation editor and special-effects generator, lets you manipulate ANIM files and design your own effects. Use spins, page-turns, venetian-blinds, confettis, strobes, and unusual color and tiling effects. You can manipulate your ANIM files with the program's ANIM editor. Included in the $99.95 package is a library of ready to use effects such as fountains, flips, and shatters, plus color effects such as solarizing, shadows, translucency, masks, and cycling. Make your entrance by calling Aegis Development Inc., 2115 Pico Blvd., Santa Monica, CA 90405, 213/392-9972 or 800/345-9871. *Reader service number 551.* ■

HORS D'OEUVRES

Hints, tips and techniques

from your fellow Amiga users.

The Immortal Bard in Double Time

STUART PIERCE'S TIP for speeding up Bard's Tale II [Hors d'oeuvres, Nov. '88, p. 12] can be improved by copying FACCII to the Bard's Tale character disk. This automatically loads FACCII when booting the game and requires no further action to speed up the game for more enjoyable play.

To accomplish this on a two-drive machine, load a Workbench disk with FACCII, runback, and all the original Workbench commands of the C directory. Put your Bard's Tale character disk in df1: with the write protect "off." Make a C directory on the character disk by typing:

```
makedir df1:c
```

Now copy all the commands (including FACCII and runback) from the Workbench disk to the new C directory on the character disk by typing:

```
copy c: to df1:c all
```

Note: You really don't need all the commands to make this tip work, but since there is a lot of space available on the character disk, copying them all is quickest and does no harm. If you wish to experiment, you could selectively delete C commands from the character disk to find the ones that are essential.

It is also necessary to change the startup-sequence of the main Bard's Tale disk. With the Workbench disk still in df0: and the main Bard's Tale disk in df1: type:

```
ed df1:s/startup-sequence
```

Modify the startup-sequence to read as follows:

```
df1:c/assign c: df1:c
runback -5 df1:c/FACCII 1024
cd df0:
Bard
```

Save this new startup-sequence by typing esc x. To abort, type esc q. The number 1024 is the number of buffers that FACCII will use. This depends on the amount of RAM you have. The number can be changed from 32 to 4096.

Now, when you boot up Bard's Tale II with the modified main disk and modified character disk, you will see the message "started df1:c/FACCII as a background task" and the magic of FACCII will be evident when you start to play the game.

Thanks to Stuart Pierce for the original tip!

Thanks to Electronic Arts for not copy-protecting Bards Tale II!

Thanks to Perry Kivolowitz and ASDG for FACCII!

Chris Geren
Pointe Claire, Quebec

Your BASIC Library

WHEN CALLING AMIGADOS functions from BASIC programs, it is necessary to open the relevant library with a LIBRARY command and to have the associated .bmap file where LIBRARY can find it. It is usually stated that the .bmap file must therefore be in the current directory. This leads to a sequence of commands such as:

```
CHRDIR ":BMAPS"
LIBRARY "dos.library"
CHDIR ":"
```

This construction assumes that the directory to restore as the current directory is the root directory of the boot disk, which might not always be the case.

The issue of the current directory can be sidestepped very nicely by simply including the full path name in the LIBRARY command:

```
LIBRARY "LIBS:BMAPS/dos.library"
```

This example assumes that the BMAPS directory is included as a subdirectory in the :libs directory. Furthermore, the :libs directory is referred to by its logical device name, LIBS:, so that it will be found whether it is on the boot disk, in RAM: or RAD:, or wherever.

Peter H. Orvis
Arlington, VA

Surge Suppressor

I HAVE HAD my A1000 for three years or so, and since the beginning, I have experienced frequent disk errors. I had the drives examined once, but that didn't help. Exasperated, and in need of a diskdoctor myself, I consulted an acquaintance who designs microcomputers. He suggested my problem may be with the power supply and suggested I try a simple power line conditioner/surge suppressor.

It seems that when there is a power fluctuation during a disk access, it's possible that the disk speed may vary, and thus corrupt the disk. The conditioner keeps the line voltage more constant. So far my problems are solved.

David Walter
Rensselaer, IN

If you have an idea you'd like to share with our readers, send it to Hors d'oeuvres, AmigaWorld *Editorial, 80 Elm St., Peterborough, NH 03458. If your idea gets published, you'll receive an* AmigaWorld *surprise gift.* ■

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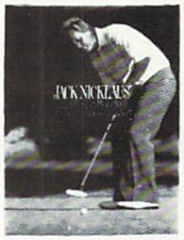
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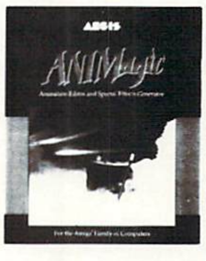
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HELP KEY

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By Louis R. Wallace

Mac Emulator

Q: *I have heard that it is possible to emulate the Macintosh on the Amiga. How is this done? What type of Mac is emulated?*

J. Slater
Edmonton, Alberta, Canada

A: Yes, it is possible. What you have probably heard about is the A-Max Macintosh emulator marketed by ReadySoft, the same people who produced one of the original C-64 emulators. While I have not yet used A-Max, I have seen it demonstrated at various Amiga shows. Unlike earlier software-based emulators, which were so slow that they were almost useless, the A-Max appears to be a much more viable emulator. This is partly because it is a hybrid of hardware and software (like the MS-DOS Bridgeboard), requiring you to buy and install original Mac ROM chips in order to function. Another reason for A-Max's robust nature is that the Mac, like the Amiga, is also a 68000-based machine. So, unlike previous emulators, A-Max does not have to translate machine code into its native 68000 assembly language.

Speak to Me

Q: *I own an Amiga 2000 with one meg of RAM and want to use it to create realistic digitized voices. How much RAM do I need in order to digitize one minute of sound? Can you recommend a specific hardware sound digitizer for me?*

Charles Maxey
Stillwater, OK

A: The amount of RAM required to digitize sound for any given amount of time depends on the rate of sampling you use (the rate you capture the incoming data). In general, the faster you sample, the better your sampled sound will be. The way to calculate it would be:

samples per second ×
number of seconds =
sample size in bytes

If you were to sample at 15,000 bytes per second for a full minute, it would take 15,000 × 60 bytes, or 900K of RAM. Slower sampling rates would require less RAM, and faster rates more RAM.

Because I don't know exactly what you want to do with your sounds, I won't make any specific product suggestions. In order to make a wise purchase decision, you should first decide if you need stereo or mono sound, determine what sampling rates you will need, and finally think about how sophisticated you want the sound-processing software to be. Then watch the hardware reviews for product evaluations, and if at all possible, stop in at a local dealer and ask for some hands-on demonstrations.

Hi-Res Flicker Control

Q: *I want to upgrade my Amiga 2000's screen display to get rid of the incessant flickering in high resolution. I understand there are two ways to do that. One is to get the flickerFixer board (MicroWay), while the other is to wait until AmigaDOS 1.4 is released. In either case, will I be able to use my 1084 monitor (or modify it in some way)? Also, is it true that the flickerFixer gives you more colors? How many colors will the 1.4 chips offer? How much will they cost?*

Jerry Williams
Mannford, OK

A: The flickerFixer board does an excellent job of eliminating flicker in the Amiga's 640 × 400 display, but to use it you will need a multisync monitor. (Your 1084 will not work at all). When the 1.4 OS and graphic chip set is released, you will still need a multisync (or other special monitor) to use its new non-interlaced 640 × 400 four-color display mode. (Another method of getting rid of flickering is to use the Viking 1 monitor from Moniterm Corp.)

No, the flickerFixer does not offer more colors; it uses the standard 4096 colors displayed by the Amiga hardware. The 1.4 OS with the new chip set will not offer more colors either. As for the cost of the new chips, that isn't known yet, because CBM hasn't released them, except to a few developers.

Warning!

I hate to keep bringing up the subject of viruses, but I recently came upon a report of a "fake" VirusX that was actually a trojan horse virus carrier. This little nasty was labeled VirusX version 3.3, and there isn't any version 3.3. Know the source of your software! With something as serious as a virus-protection system, it pays to get it only from reputable companies (in the case of commercial software) or telecommunication networks (for PD virus protection like VirusX) where these things are tested before being made available for downloading. ■

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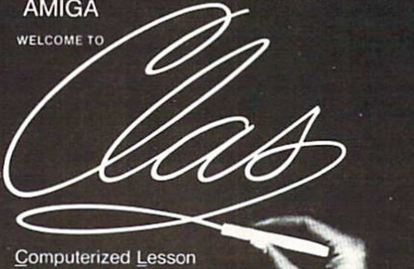
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□ 4. Amiga 2000
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□ 24. CAD/CAM
□ 25. Other

E. Which peripherals will you purchase in the next 12 months? (Please choose all that apply.)
□ 26. Monitor
□ 27. Dot Matrix Printer
□ 28. Modem
□ 29. Memory Expansion
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